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STATE OF KELANTAN.

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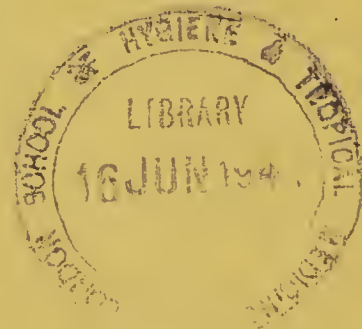
# THE ANNUAL REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR

1933



BY

DR. L. W. EVANS,

CHIEF MEDICAL OFFICER.

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KELANTAN:

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## TABLE OF CONTENTS.

Section		<u>Page.</u>	<u>Paras.</u>	<u>Appendix.</u>
I	<u>ADMINISTRATION.</u>			
	STAFF	1	1—8	I
	HONOURS	1	9	
	ORDINANCES	1—2	10—13	
	FINANCIAL	2—3	14—25	II
„	II <u>PUBLIC HEALTH</u>	3—8	26—77	
	GENERAL	3—4	26—36	
	MALARIA	4	39—42	
	INFECTIOUS DISEASES	5	43—55	
	PNEUMONIA	5	48—51	
	PULMONARY TUBERCULOSIS	5	52—55	
	YAWS	5—6	56—57	
	LEPROSY	6	58	
	VENEREAL DISEASES	6	59	
	HELMENTIC DISEASES	6	60	
	FEVERS OF THE ENTERIC GROUP	6	61—62	
	TROPICAL TYPHUS	6	63	
	DYSENTERY	6—7	64—65	
	VITAL STATISTICS	7—8	66—77	IX—IXe
	SICK AND INVALIDING OF OFFICIALS	8		
„	III <u>HYGIENE AND SANITATION</u>	9—14		
	GENERAL	9—10	78—87	
	DAIRY FARMS	10	88	
	SOAP FACTORIES	10	89	
	DRAINS	10	90—91	
	WATER SUPPLY	10	92—93	
	HOUSING AND TOWN PLANNING	11	94	
	CONTROL OF FOOD	11	95	
	MALARIA	11	96—97	
	SMALL-POX	11	98—100	
	CHOLERA	11—12	101—103	
	RABIES	12	107—111	
	HEALTH OF ESTATES	13	112—120	VIII
	SCHOOL HYGIENE	14	121—131	
„	IV <u>PORT HEALTH WORK</u>	14—15	132—135	
„	V <u>MATERNITY AND CHILD WELFARE</u>	15	136—141	
„	VI <u>HOSPITALS AND DISPENSARIES</u>	15—20		
	GENERAL	15—17	142—148	
	EUROPEAN HOSPITAL	17	150—155	
	KOTA BHARU HOSPITAL	17—18	156—161	III—VII

	<u>Page.</u>	<u>Paras.</u>	<u>Appendix.</u>
FEMALE HOSPITAL, KOTA BHARU	18	162—165	
KUALA KRAI HOSPITAL	18	166—172	
PASIR PUTEH DISPENSARY	19	173—176	
TUMPAT DISPENSARY	19	177—181	
PASIR MAS DISPENSARY	19	182—184	
TRAVELLING DISPENSARY	19—20	185—198	VI
Section VII <u>PRISONS AND ASYLUMS</u>	20—22		
HEALTH OF PRISONERS, KOTA BHARU	21	201—202	
HEALTH OF PRISONERS, KUALA KRAI	21	203	
MENTAL DISEASES HOSPITAL	21	204—212	
ISOLATION CAMP	22	213	
LEPER ASYLUM	22	214—215	
„ VIII <u>METEOROLOGY</u>	22	216	XII
„ IX <u>VETERINARY</u>	22—23	217—224	X
VACCINATION	47		



## SECTION I.

### I. ADMINISTRATION.

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#### A. STAFF.

(1) Dr. L. W. Evans held the appointment of Chief Medical Officer; Dr. W. J. Geale that of Medical Officer, Ulu Kelantan (Part time) and Miss M. Brebner that of Matron in charge of the European and Female Hospitals Kota Bharu, throughout the year.

(2) Dr. J. H. Bowyer held the appointment of Medical and Health Officer Kota Bharu until 3. 2. 33, since which date the appointment has been vacant.

(3) Dr. Lim Shin Thwin was reappointed as Medical Officer to act in Kota Bharu when required from 23. 6. 33.

(4) Mr. E. P. Canagasaby and Mr. G. K. Pillay remained as Hospital Assistants at Kota Bharu, and Mr. Sie Sing Chang at Kuala Krai, while Mr. Go Boi Gee continued in charge of the Pasir Puteh Dispensary and Mr. A. Nadarajah acted as Deputy Health Officer, Tumpat.

(5) On 2. 9. 33 a Dispensary was opened at Pasir Mas, and Che Matt bin Sulaiman was put in charge.

#### Retirements.

(6) Che Majid bin Shok Surver retired on 19. 10. 33 after 16½ years service as a Hospital Attendant.

#### New Appointments.

(7) Dr. Lim Shin Thwin was reappointed as Medical Officer to act in Kota Bharu when required as stated above.

#### Leave.

(8) The following members of the Staff were granted vacation leave:—

Che Kassim bin Mohd: Amin from 6. 3. 33 to 6. 5. 33.

Mr. K. M. Kurup from 5. 8. 33 to 5. 9. 33.

Mrs. J. Pestana from 5. 8. 33 to 5. 9. 33.

Miss A. Oliveiro from 12. 12. 33 to 1. 1. 34.

#### Honours.

(9) The names of the 3 Hospital Assistants, Mr. E. P. Canagasaby, Mr. G. K. Pillay and Mr. Sie Sing Chang, were included in His Highness The Sultan's Birthday Honours each being presented with the Pingat Ta'at (P. T.).

#### B. ORDINANCES AFFECTING PUBLIC HEALTH.

(10) No new Enactments were passed during the year, but several minor amendments to existing ordinances were introduced.

(11) Of these, Notification No: 78 added Barbers Shops to the list of premises to be licenced and a new rule to the effect that "no person suffering from any skin disease or infectious or contagious disorder shall live, work or be employed on any premises used for the purposes of an eating-house, coffee-shop or barber's shop" (amending the Municipal & Health Rules 1930 Notification No: 34 of 1930).

(12) Notification No: 73 of 1933 amended the "Labour (Non-Indian) Enactment" concerning female and child labour to the effect that no female labourer of any age shall be employed between the hours of 10 p. m. and 5 a. m. (apart from domestic

service), and that no child who has not attained the age of 12 years shall be employed in various stated forms of employment which are considered dangerous.

(13) Other amendments merely altered scales of charges for licences etc.

### C. FINANCIAL.

(14) The total revenue collected during the year was \$10,840.44 compared with \$9,933.84 in 1932.

(15) This revenue was derived from :—

Hospital Fees and Sale of Medicines	..	..	..	\$10,402.96
Fees for Licence etc.	..	..	..	\$437.48.

Of the \$10,402.96 derived from Hospital Fees.

\$1318.25 were for treatment in the European Hospital.

\$2460.67 in 1st Class Wards of the General Hospital.

\$1011.48 in 2nd Class Wards of the General Hospital.

\$2802.20 in 3rd Class Wards of the General Hospital.

\$2810.36 for sale of Medicines in the Out-patient Departments.

(16) In the 3rd Class Wards of the General Hospital, the majority of patients receive free treatment. Out of 5105 cases treated, only 452 paid the prescribed rates, practically all of whom were labourers sent for treatment by companies such as rubber estates and the Federated Malay States Railways.

(17) Practically all the patients attending the out-door dispensaries are classed as indigent, and receive free treatment while all treatment at the centres visited by the travelling dispensary is free.

(18) Out of the 25 patients admitted to the European Hospital 8 were charged at the rate of \$5.00 per day instead of the official rate of \$10.00, following a concession instituted in 1931, when salaries of Europeans on Estates etc. were reduced so drastically owing to trade depression.

(19) The total expenditure was \$152,971.76 (8.49% of the total revenue of the State), compared with \$170,717.39 in 1932.

(20) Though it has been necessary to reduce all votes in recent years, owing to the depressed financial conditions, the amount allotted to "Medicines and Instruments" has not been affected to any great extent, and the expenditure of \$31,146.00 constitutes 20.36% of the total cost of the Department (compared with an expenditure of \$34,477.00 equivalent to 16.4% of the total expenditure three years ago).

(21) The chief reduction has been in "Personal Emoluments" and "Wages Hospital Servants" votes which this year amounted to \$68,793 compared with \$85,136 three years ago.

This is regarded as the limit of economy under these headings, and a standard which is not expected to be maintained when financial conditions improve, as it imposes more work on the Hospital Assistants and their staffs, than would be expected of them in normal times.

(22) Of the \$31,146 expended on "Medicines and Instruments".

The largest items were:—

Quinine and allied preparations (including Plasmoquine and Atebrin)	..	..	..	\$8,604
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Organic Arsenical preparations (Salvarsan, Stovarsal etc.) .. .. .	\$7,216
Dressings (including cotton wool, lint etc.) .. .. .	\$3,070

(23) The cost of each fixed out-station dispensary was about \$4,700 including the salaries of the dressers in charge and their attendance while the Travelling Dispensary cost \$8,770 including petrol and drugs.

(24) As pointed out in last year's report the cost of out-patient treatment is high in a country where most adults seek treatment for yaws or malaria and children are brought for worm treatment or vaccination. The average cost per patient is estimated at 8½ cents for drugs and dressings alone.

(25) Details of Revenue and Expenditure is given in Appendix II.

## SECTION II. PUBLIC HEALTH.

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### A. GENERAL REMARKS.

(26) No satisfactory index of the general health of the State is available, as Death Registration is still imperfect.

(27) The reduction in the number of deaths notified, and in the number of patients seeking treatment from the Travelling Dispensary suggests, however, that the general health this year has been good.

(28) There is no reason to believe, that in rural areas, at any rate, the general health differs to any appreciable extent from that in other parts of Malaya. Pulmonary Tuberculosis appears to be more commonly seen than on the West coast, but statistics are not available to confirm this.

(29) Hookworm disease is very common, and Malaria has an incidence which is apparently similar to the rest of Malaya. Yaws is a very common complaint among the Malays.

(30) Little is known about the health of the aboriginal races in the unopened jungle which forms the greater part of Southern Kelantan.

(31) This year (in April) the Chief Medical Officer had occasion to make another journey up the Nenggiri River, as a suspected case of small-pox had been reported in one of the ladangs (clearings) occupied by the Temior in this region, (Pengulu Jagor's house at Kuala Cherus).

(32) Though the visit was a hurried one, 3 Malay villages (Kuala Betis, Dusun Rajah and Sonkai), and 4 Temior clearings were visited and 249 people examined and vaccinated (130 Malays and 119 Temior).

(33) At Dusun Rajah (a few miles above Kuala Betis) 2 elderly women had old marks of Chicken-pox or Small-pox, but these were due to infection at Pasir Mas many years ago.

At Kuala Cherus, the wife of Pengulu Jagor had a few marks suggestive of recent very mild Chicken-pox, but apart from these people, no evidence of these diseases was seen, and they appeared to be unknown even among the old people in this valley.

(34) No cases of Yaws (or scars of old infection) were seen in Kuala Betis or beyond, but two severe cases were seen at the Temior clearing at Chokek (down stream of Kuala Betis).

Unlike the more primitive and nomadic Semang, met with in other parts of Kelantan, e. g. Ulu Sokor, skin disease is not common among the Temior - or at least among those whose clearings are on the river bank - and only 4 cases ( *Tinea circinata*) were seen among the 119 examined, three of these being in the house of Pengulu Stia at Sonkai, which is more primitive and much dirtier than the other Temior houses visited and is not even raised above the ground level.

The Temior on the river side, normally build raised houses of bamboo (communal to the extent that all members of the clearing share it), and the ground beneath and around these is kept as clean if not cleaner than most Malay village houses.

They appear to bathe frequently, and the young adults take considerable interest in their personal appearance. All clearings appeared to be sufficiently provided with the staple articles of diet tapioca, bananas etc. being the chief garden produce, while fowls are numerous. Rice is grown, but the crop is apparently liable to be disappointing.

(35) Goitre is extremely common in the Malay villages on this river. No cases were seen among the Temior, though it was said to occur.

(36) The incidence of Malaria was not ascertained. Fever was said to be common, and at Kuala Betis practically all the children examined had enlarged spleens.

#### B. INFECTIOUS AND COMMUNICABLE DISEASE.

##### (a) Mosquito - borne Diseases.

(37) Yellow fever does not occur.

(38) Dengue is also conspicuously absent.

##### (39) Malarias:-

The proportion of cases diagnosed as malaria to the total admissions to Hospital from all diseases was as follows:—

17.29% in Government Hospitals (compared with 15.65% in 1932 and 17.44% in 1931).

17.38% to Estate Hospitals (compared with 21.3% in 1932 and 31.3% in 1931).

Accepting "Demam Kura" as being probably Malaria, 101 deaths reported in the whole State were due to this disease.

(40) Out of 192 films showing parasites examined in Kota Bharu Hospital 48 showed *P. vivax* 122 *P. falciparum* and 18 *P. malariae* while 4 showed mixed benign and sub-tertian infections.

In the majority of cases thin films were examined and the proportion of sub-tertian infection is undoubtedly higher than these laboratory findings indicate, as parasites were not always found in typical cases such as cerebral malaria.

(41) 3 cases of "Blackwater Fever" were admitted to Kuala Krai Hospital, one of whom died, while one case was treated at Kerilla Estate Hospital, (and recovered).

(42) Though Quinine or Atebrin, (followed by a course of Plasmoquin to destroy gametocytes) forms the routine treatment in the hospitals, Totaquina was used almost exclusively for outdoor treatment by the travelling dispensary. There is no objection on the part of the Malays to this preparation on the ground of colour etc. and many prefer it as they find that it does not make them as giddy as Quinine.



(b) Infectious Diseases.

(43) There were no cases of Cholera or Plague.

(44) Small-pox. — No case occurred during the year.

(45) Chicken-pox. — 42 cases were seen. Of these 9 cases occurred among pupils at the Royal English School, Kuala Krai. 93 children attended this school of whom 22 were boarders.

The first case in this school was notified on May 8th and the last on May 18th. All were among the day boys, who were isolated in their houses the other children attending as usual, as it was considered that if the school was closed, it would be difficult to keep contacts under observation.

25 other cases occurred in Kuala Krai 20 of which were among Federated Malay States Railways personnel-mostly in the Menial Staff Quarters. All the cases were mild.

(46) Measles. — 22 cases were seen during the year. This disease is common; cases are usually mild and are not reported by the Malays, who regard it as a minor ailment.

(47) Mumps. — Although only one case was seen, this disease is also not uncommon, being like measles regarded as a minor ailment by Malays.

(48) Pneumonia. — 135 cases with 36 deaths were admitted to the Government Hospitals during the year compared with 174 cases with 38 deaths in 1932.

(49) The majority of these cases were Indians (65) and Chinese (46).

(50) Only 24 Malays were admitted for Lobar Pneumonia and it would appear that they are less liable to the disease than Indians or Chinese.

(51) Malay diagnosis is too crude for the "cause of death" on death notification forms to be considered as a guide to the prevalence of such a disease.

(52) Pulmonary Tuberculosis. — As pointed out in the general remarks this disease is common, and is frequently seen, not only in town dwellers, but also among those in agricultural districts and fishing villages.

(53) There seems to be little doubt that the Malay house with walls of plaited bamboo is an important factor in the spread of lung infections, for these walls are ideal for the collection of dust and germs, and any breeze must blow such germs back into the house. A single case of active phthisis will therefore make such a house a danger to all occupants, and it will remain so for a considerable time after the removal of the affected person.

(54) The high humidity during the North-East monsoon months must also be considered a predisposing factor, or at least an aggravating factor as far as producing exacerbation of quiescent or mild disease is concerned.

(55) Although only one government officer was boarded out of the service for pulmonary tuberculosis, 3 others were diagnosed as suffering from this disease, and were still on extended sick leave at the end of the year.

Three Estate labourers were repatriated as they suffered from this disease, and 92 cases were treated in Hospital, 22 of whom died.

(c) Other communicable Diseases.

(56) Yaws. — Although owing to treatment in the early stages of this disease the crippling and disfiguring sequelae are now less commonly seen, yaws is still common in most areas.

(57) The total number of attendances at the various dispensaries were as follows:—

Travelling Dispensary	=	12,552
Kota Bharu	=	3,514
Pasir Puteh	=	1,995
Tumpat	=	1,561
Pasir Mas	=	1,216
Kuala Krai	=	1,255
Total	=	<u>22,093</u>

(58) Leprosy. — As is pointed out in Section III (para 105) control of leprosy in Kelantan has difficulties still to be solved.

15 new cases were diagnosed during the year, 13 of whom were Malays, the others being Indians.

(59) Venereal Diseases. — These are common among Asiatic races in the larger towns but are very rarely encountered in rural areas.

Thus these diseases accounted for 301 or 8.38% of admissions to Kota Bharu Hospital, and 107 or 5.84% of admissions to Kuala Krai Hospital, while only 0.21% of patients at Pasir Puteh Dispensary suffered from venereal disease and it was very rarely encountered in villages visited by the Travelling Dispensary.

(d) Helminthic Diseases.

(60) Round worm and hook worm infections are extremely common, but no case of tape worm was seen.

In 3,536 stool examinations (direct method) made in Kota Bharu Hospital:—

Tricocephalus dispar ova were found in	665
Ascaris ova in	834
Ankylostoma ova in	1,624
Strongiloides intestinalis ova	62
Taenia ova in	nil

(e) Fevers of the Enteric Group.

(61) These fevers are undoubtedly more common in Kota Bharu than had been evident previously.

In 11 cases admitted to Kota Bharu State Hospital diagnosis was confirmed serologically at the Institute for Medical Research, Kuala Lumpur.

Of these cases 8 were Typhoid and 3 were Para Typhoid A.

(62) These cases were sporadic, and it was not possible to trace the infections to any definite source. In view of the insanitary conditions obtaining in the old town area of Kota Bharu (referred to in Section III) where the majority of the eating-shops are situated, the occurrence of these diseases is not surprising. The present water supply, also referred to in Section III, is another likely source of infection.

(f) Tropical Typhus.

(63) Two doubtful cases were admitted to Kota Bharu Hospital during the year. Serological tests made at the Institute for Medical Research, Kuala Lumpur, were suggestive but not conclusive of this disease.

(g) Dysenteries and Diarrhoea.

(64) These accounted for 1.2% of cases admitted to Government Hospitals (compared with 1.98% in 1932), and 5% of patients admitted to Estate Hospitals. The majority of dysentery cases were due to *Amoeba histolytica*.



(65) Though it is hard to believe that bacillary dysentery is rare in rural villages where sanitation is crude and conservancy non-existent, cases are rarely admitted to Government Hospitals.

Out of 79 definite cases of dysentery, the stools of which were carefully examined in the State Hospital, Kota Bharu, 73 showed *Amoeba histolytica* or its cysts.

No epidemic of bacillary dysentery was reported this year, though localised epidemics have been usual in previous years as pointed out in this Section of last year's Report.

### C. VITAL STATISTICS.

(66) The Birth and Death Registration Enactment No. 6 of 1930 makes notification of deaths within 12 hours and of births within 2 weeks compulsory.

(67) All Police Stations and Penggawas are deputy registrars, while several European estate managers have been given the powers of deputy registrars for the estates under their charge.

Notification forms are forwarded from the above to the Registrar's Office (Chief Medical Officer) where they are registered.

(68) Birth and death notification is probably still too unreliable to be accepted as an accurate index of the health of the State, or to be used in estimating the population, and vital statistics are given (in Appendix IX) merely for comparison with previous years. An estimated population based on a geometrical progression, however, should prove fairly accurate for Kelantan, for here migration is a minor factor, the resident Malay population accounting for 90% of the whole.

(69) The total number of deaths reported was 6,439 (compared with 6,624 in 1932) giving a death rate of 17.04 per mille; and births 10,972 (compared with 12,831 in 1932) giving a birth rate of 34.8 per mille while 1,423 deaths under one year of age were notified giving an Infantile Mortality of 129.60 (compared with 111.77 per 1,000 births in 1932).

(70) This year the cause of death was given on notification forms. Previously this had not been required, as it was desired to avoid anything that might tend to discourage notification, and the sacrificing of this information (which at best will be guess-work) was considered of little importance.

As, apart from cases admitted to a hospital, very few are seen by any one capable of making a diagnosis, it will be obvious that classification of these causes of death will be of no real value from the point of view of arriving at the more prevalent diseases.

(71) Obvious cases of malaria are probably recognised, and reported as "Demam Kura", which in Kelantan is practically always used when malaria is meant, whether acute or chronic with enlarged spleen. "Demam Ketar" is used colloquially for the shivering stage, but is known to be only a stage and is rarely used in reporting the illness or death. Even here a considerable proportion of cases, such as those with cerebral symptoms will be missed. (In the Statistics in Appendix IX F Demam Kura is classified as "fever, probably malaria" and all other fevers apart from definite cases of malaria as "fever unclassified").

(72) In the same way, "Batok Kring" may give a fair indication of the number of deaths from Pulmonary Tuberculosis.

(73) On the other hand, cases reported as "Demam Panas" (Hot Fever), "Demam Sahaja" (Fever only) etc., are too indefinite for classification, while other "causes of death" given are symptomatic only and childishly simple such as "Sakit Kepala" (Headache) 3 deaths, "Sakit Perut" (Stomachache) 149 deaths, and still others are merely fantastic and based on local superstition e.g. "Sakit Kelintasan" (possessed of a devil) 6 deaths.

(74) Notification of the causes of death is of interest, however, in bringing to light certain accidents which would otherwise be missed. Thus during the year, 3 persons are reported to have died of snake bite, and 2 from "Sea Snake" bites, ("Ular Leret").

Enquiries following the report of these deaths elicited the information that 5 other fishermen were bitten by "Sea Snakes" (? muraenaedae) and recovered after severe symptoms.

Stings by the "Ikan Sembilang" (Paraplatosus albilabris) are frequent, but no fatal cases have been recorded, and though one European injured in this way suffered very severely for several days (until a spike  $\frac{3}{4}$  inch long was removed from the wound) and had marked cardiac irregularly for over two weeks, this poison appears to have comparatively little reaction on the Malays.

(75) It is strange how rarely deaths are caused by wild animals, for apart from the cases reported in the Hospital records (para 145) only one death is reported (a Malay who was fatally gored by a buffalo).

(76) The fact that 101 cases were notified as having died from "Cheroh", which may be accepted as, (in the large majority of cases) referring to symptoms usually associated with bacillary dysentery, supports the assumption that this disease is not uncommon although cases are not seen in hospital practice.

(77) Appendix IX E, giving deaths by age groups, will also be only approximately correct, for, as pointed out in last year's report, the Malay keeps no accurate record of his age, and birth registration is of too recent introduction to be of much help.

D. TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF EUROPEAN AND NON-EUROPEAN OFFICIALS, 1933.

		Europs:	Non-Europs:
Total number of officials resident	...	22	1138
Average number resident	...	17.85	632.96
Total number on Sick List	...	6	432
Total number of days on Sick List	...	78	2540
Average daily number on Sick List	...	0.21	6.95
Percentage of sick to average number resident	...	0.33	0.68
Average number of days on Sick List for each patient	...	13.00	5.87
Average sick-time to each resident	...	4.37	2.07
Total number invalided	...	nil	19
Percentage of invalidings to total residents	...	nil	1.66
Total deaths	...	nil	2
Percentage of deaths to total residents	...	nil	0.17
Percentage of deaths to total average number resident	...	nil	0.31
Number of cases of sickness contracted away from residence	...	?	?



### SECTION III.

## HYGIENE AND SANITATION.

---

#### A. GENERAL.

(78) The general sanitary work in towns is under the control of the District Officers concerned, the Medical Staff advising and co-operating.

(79) In Kota Bharu, Kuala Krai, Tumpat, Pasir Mas and Pasir Puteh refuse is disposed of by incineration. Householders are required to provide dust bins of regulation pattern. In Kota Bharu refuse from these is moved in large bins by hand-cart to suitable points for collection by motor lorries. In other towns it is collected and removed to the incinerator area by hand-cart or bullock-cart.

(80) A single bucket system of night-soil removal is the practice in Kota Bharu, Kuala Krai and Tumpat, the night-soil being disposed of by trenching outside the town limits. This work is given out to contractors but arrangements have been made to carry out the work departmentally at Tumpat next year.

Arrangements were also being made at the end of the year to extend this system to Pasir Mas and Pasir Puteh.

(81) In Kuala Krai which is a comparatively new town with a good lay out and in Tumpat, where overcrowding of houses is not marked, this system works well, but in Kota Bharu (with the exception of the new market area which is well planned) satisfactory conservancy is still impracticable, though steady progress is being made in improvement of this area.

The old town area grew up in a haphazard fashion, no back lanes being provided for, with the result that the areas inside the squares formed by the shop-houses are occupied by groups of Malay dwelling houses of the village type, which in most cases abut against the back walls of the shops.

(82) Although the bucket system referred to above is enforced as far as possible for shops and houses on the street fronts in this old part of Kota Bharu town, and this year has been extended to several groups of Malay dwelling houses, the total number of houses providing these bucket latrines is still only 497 (compared with 454 in 1932)-(excluding Government Institutions and 11 latrines provided for public use)-, while the number of occupied houses in the town was given as 2,412 in the 1931 Census.

(83) Conservancy in the groups of dwellings shut in by shop-houses is still as primitive as in rural Malay villages.

(84) Acquiring the land necessary for the construction of back lanes in this old town area has proved impracticable, and more gradual methods of modernisation have had to be adopted.

(85) In last year's report, it was stated that an Advisory Town Board had been appointed and a modified town planning scheme adopted, based on widening and making provision for back lanes along existing street lines.

In the streets dealt with no repairs will be allowed to existing buildings, and as these are demolished, new building must follow the new regulations with regard to type, distance from the centre of the road, and provision for 14 foot back lanes.

(86) This year, to stimulate migration from this insanitary area to the well planned new town area in the neighbourhood of the new market, it was decided that no new licences would be granted for eating-shops, coffee-shops, bakeries etc. in any premises which did not conform with the following:—

- (1) Satisfactory road drains.
- (2) Back lane.
- (3) Sufficient ventilation.
- (4) Out-side latrine.

In addition it was decided to gradually eliminate the poorer premises which already held licences by non-renewal of these after sufficient notice had been given to enable the proprietors to find new premises.

Thus 3 coffee-shops, 9 eating-shops and 2 bakeries lost their licences as from the end of the year, and those of 4 coffee-shops, 3 eating-shops and 4 bakeries were only renewed for 6 months.

(87) A further improvement in this part of Kota Bharu has been effected this year by gradual demolition of the buildings which had been erected on the area burnt out in the 1926 fire. Following that fire, erection of temporary buildings was allowed for occupation by those whose houses were destroyed, until they could find other premises.

These temporary buildings have been added to and extended; those fronting the roads have been converted into small shops etc., until the area has become a solid mass of heterogeneous erections of wood, corrugated iron, beaten out petrol tins etc., the centre of which is almost impossible to penetrate.

Demolition orders were issued to groups of these houses at intervals of 3 months, (an attempt being made to start with the worst) and it is hoped that in the coming year all the buildings in this very insanitary area will be demolished.

#### Dairy Farms.

(88) This year, all dairy farms were removed out side town limits.

Of these dairy farms there are at present 9 licenced in Kota Bharu, 1 in Pasir Mas, 1 in Pasir Puteh, 1 in Tumpat and 11 in Kuala Krai. All are kept in satisfactory condition.

#### Soap Factories.

(89) Soap making has become a popular industry in Kota Bharu and this year 7 new factories were licenced making a total of 9.

These are usually small, each occupying one or two shop lots, the actual soap boiling being carried out in the open space at the back. They appear to cause no nuisance.

Most of these factories are Chinese owned, but 2 are run by Malays 2 by Indians and 1 by a Japanese.

#### Drains.

(90) An additional 4266 feet of open concrete drains were constructed in Kota Bharu during the year.

(91) There is still a considerable amount of work to be done before drainage in Kota Bharu is satisfactory, while in other towns apart from Kuala Krai it is crude or non-existent.

#### Water Supply.

(92) Water supply in all towns including Kota Bharu still depends on deep or - more usually - shallow wells.

(93) The experiments made by the State Engineer referred to in last year's report have proved successful. A site has been found (after extensive trial over a



wide area), where an ample supply of water is obtainable from a driven well 40 feet deep and 16 inches in diameter. This water is drawn from a stratum of medium sand beneath a 7 foot stratum of light clay. Both chemical analyses and bacteriological examinations made both at the Institute for Medical Research, Kuala Lumpur and at the Chemical and Bacteriological Departments of the Singapore Municipality have been very satisfactory from the point of view of potability.

These samples were taken on three occasions under different weather conditions (June, after a long dry spell November and December).

At the end of the year, arrangements were being made to construct a town supply from this source.

#### Housing and Town Planning.

(94) All plans of houses in Municipal areas are submitted to the Medical Department for opinion re sanitary measures.

#### Inspection and Control of Food.

(95) Slaughter houses, markets, dairies, etc., are inspected by the Health Staff and insanitary conditions dealt with.

### B. PREVENTIVE MEASURES.

#### (a) Malaria.

(96) Regular oiling is carried out at Kota Bharu, Kuala Krai and Pasir Puteh.

(97) In Kuala Krai excellent progress has been made in the straightening of a stream - Sungei Kerukut - which follows a winding course through the town limits. Anti-Malarial work has always been a difficult problem, (and costly in oil) along this stream, and the present work, when completed will eliminate several dangerous ravines.

Anti-malarial work on estates is dealt with in para 117.

#### (a) Epidemic Diseases.

##### Small-pox.

(98) Vaccination is done free of charge at any Government Dispensary, and by vaccinators who tour the State.

(99) This year 7723 vaccinations were done. This number is below the normal, as owing to the intensive campaign last year (when a record number of 25,801 was recorded) few besides infants born during the year required vaccinating.

Of this total:—

4,180	were done by travelling vaccinators.
1,237	by the travelling dispensary.
2,102	in Kota Bharu out-patient department.
69	in Kuala Krai out-patient department.
nil	in Pasir Puteh dispensary.
135	in Tumpat dispensary.

(100) Lymph supplied by the Institute for Medical Research, Kuala Lumpur was used.

#### (b) Cholera.

(101) There were no cases during the year.

(102) As all out-breaks recorded in Kelantan started in April, May or June, it has now been the custom for many years to "pink" all wells in the larger towns with potassium permanganate at intervals throughout the dry season.

(103) Cholera must be considered to be always a menace, and Police, Penggawas, etc., are alert in reporting any suspected cases.

(c) Helminthic Diseases.

(104) Apart from organised groups of labourers, which are usually given prophylactic treatment twice a year, and treatment of all cases met with in the various hospitals and dispensaries, little can yet be done in the way of prophylaxis of hook-worm or of other helminthic diseases at present.

(d) Control of Leprosy.

(105) This is still somewhat unsatisfactory, as control of the numerous cases who undertake to keep themselves in isolation is difficult, and improvement of this method is now under consideration.

(106) Our present procedure is:—

- (i) there is a small Leper Hospital outside Tumpat.
- (ii) non-Kelantanese lepers are sent to Pulau Jerejak, Straits Settlements or Sungei Buloh, Federated Malay States, whenever the number of these justifies the expense of transfer, which is considerable as a special leper coach has to be sent for their conveyance.
- (iii) Kelantanese lepers, who do not wish to avail themselves of our leper accommodation at Tumpat must undertake to maintain themselves in isolation which satisfies the Health Authorities and to abstain from travelling in public vehicles, visiting licenced premises or dealing in any trade prohibited by the Leper Enactment.

There are at present 36 lepers in this category, and it is in the enforcement of the observation of these undertakings that difficulty occurs.

Rabies.

(107) Rabies shows no signs of abatement in Kelantan.

Muzzling Orders (which are enforced for a period of 6 months after the occurrence of a case) have been in force in some districts practically the whole year.

(108) 1,223 dogs found at large unmuzzled were shot by the Police.

(109) 4 dog's brains forwarded to the Institute for Medical Research, Kuala Lumpur during the year, were positive for rabies (compared with 2 in 1932 and 1 in 1931).

(110) 11 people bitten by dogs were given Pasteur treatment in Kota Bharu Hospital, the emulsion being obtained from the Institute for Medical Research, Kuala Lumpur (compared with 5 people in 1932).

Of these 9 were Malays, 1 Indian and 1 Siamese.

All were "indigent", and given free treatment. The cost of this was \$180 for vaccine alone and each case was kept in hospital 14 days.

(111) An Indian labourer, bitten by a dog on a rubber estate died in Kota Bharu Hospital 8 weeks later with typical signs of rabies. Unfortunately the dog was not sent for examination in this case, and the patient's brain could not be examined at Kuala Lumpur owing to decomposition.



C. LABOUR CONDITIONS AND HEALTH OF ESTATES.

(112) Although "Kuala Geh and Stapoh Nal" and "Kuala Pahi" Estates reopened in the latter part of the year with a sufficient number of Indian labourers to come under the Indian Labour Enactment, and were visited by the Chief Medical Officer in December they have not been taken into account in the Health Statistics (Appendix VIII).

Those which have forwarded returns throughout the year, only, have been included, (as last year) as this gives more accurate figures for comparison.

(113) These continued to be visited by a medical practitioner (Doctor W. J. Geale) once a month and were inspected each half year by the Chief Medical Officer.

(114) The mortality from all causes on the visited estates was 20.8 per 1000 compared with 17.05 in 1932. The death rate among Indians was 31.28 compared with 29.79 in 1932. Considerable attention is given to care of infants and the high infant death rate of previous years has been further reduced. This year only 7 deaths occurred among the 51 infants born (compared with 6 out of 30 births in 1932 and 33 out of 73 births in 1931).

(115) Details of sickness on estates are given in Appendix VIII.

(116) It will be seen that 20 out of 42 deaths reported from estates were due to lung diseases.

46 cases of pneumonia which occurred in the Autumn months, accounting for 15 of these deaths (14 Indians and 1 Chinese).

Apart from this the health of the estates compares favourably with other years.

(117) There has been no increase in malaria in spite of the reduction in oiling on most estates referred to in last year's report. This must be again attributed to the very good condition in which all anti-malaria drains are maintained.

Most of our estates, owing to the hilly nature of the country with numerous ravines are potentially very malarious, and it is fully realized that economy in oiling is a risk which may later prove very expensive unless larvae surveys are regularly carried out and any increased incidence in malaria is conscientiously watched for.

It must be remembered that there has been no bad wave of malaria in Malaya since the economic position made drastic cutting down of expenditure on estates essential, and the absence of any ill effects following restriction of oiling during such quiescent period is liable to lead to wrong conclusions regarding the necessity of such a measure, and a state of false security based on these.

(118) Every effort is made to detect and treat malaria carriers, and periodic examination of blood films of all labourers was introduced by the visiting medical officer in the latter part of the year.

On all the estates visited, every encouragement is given to labourers to grow fresh vegetables, and ground is allotted for this purpose on a generous scale. On some, several acres of land are also allotted for cultivation of padi (rice) by the labourers for their own use.

(119) All estates have well stocked shops, where necessities are sold at controlled prices, and on all, schools, temples and creches are provided.

(120) The coolie lines are of good design.

Back to back quarters are only allowed under exceptional circumstances - on one estate where ground above river flood level is limited -. Most estate lines provide kitchens separated from the living rooms, and on some, the accommodation consists of attractive semidetached buildings.

#### D. SCHOOL HYGIENE.

(121) There are 65 Malay vernacular schools in the State. Many of these are situated in Ulu Kelantan or Kelantan Bharu and are too inaccessible for routine inspection.

(122) 42 of the more accessible schools were visited by the Chief Medical Officer or Mr. E. P. Canagasaby and 2207 children were examined.

(123) The health and cleanliness of the boys was on the whole good. Their teeth at school age are usually well formed and sound, and it is a pity that the Malay does not trouble to keep them so, and that caries is so common among adults. The importance of cleaning the teeth is now impressed on school children, and this year only 10% were reported as having dirty teeth.

(124) Active yaws was seen in 3.94% of the children (compared with 3.80% in 1932) and healed scars of former infection were present in 70%.

(125) Only 6 schools showed a spleen rate of 20% or over; four of these schools were in inland villages (Kuala Krai 31.91%, Kampong Machang 28.57%, Salor 19.35% and Kampong Kenor 37.5%), while the other two, though being situated in the coastal belt, along which malaria is usually less common, were near steep hills. (Gunong 52.38% and Kampong Gaal 29.79%).

(126) In 13 out of the 42 schools visited, the spleen rate was nil, and 12 of these were situated in the flat coastal belt stretching northwards from Pasir Puteh. Even along this coastal belt, schools situated near hills had high spleen rates, (e.g. in addition to the two mentioned above Bukit Jawa showed 8.16% and Bukit Awang 5.56%).

(127) Tumpat, situated at the delta of the Kelantan River where there are many tidal nipah swamps had a spleen rate of 12%.

(128) Kota Bharu has always enjoyed a low malaria incidence, and among the 124 children attending the Padang Garong School in this town the spleen rate was 1.61%.

(129) Skin diseases are common 8.3% had scabies, while 11.2% had fungus diseases of the skin, most of these being the disease known locally as panau (referred to in para 190).

(130) A list of pupils with enlarged spleens and scabies is given to the teacher in charge of each school, who is supplied with quinine capsules and sulphur ointment for the treatment of these conditions.

He sees that the treatment is given on arrival at school at 8 a.m. and departure at mid-day. This is safer than trusting to the parents to carry out treatment.

(131) Treatment for other ailments and vaccination is carried out by the Travelling Dispensary, on its next visit to the nearest centre.

### SECTION IV. PORT HEALTH WORK AND ADMINISTRATION.

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(132) Kelantan has no port designated as such under article 28 of the International Sanitary Convention of 1926, but coasting steamers plying between Singapore and Bangkok call at Tumpat, while one steamer plying between Kelantan and Singapore calls at Semerak and Bachok.

(133) The Dreaser-in-Charge of the Government Dispensary at Tumpat exercises the powers of Deputy Health Officer and inspects all passengers.



(134) Other vessels, Chinese or native boats, are boarded by the Customs Officials, and, in the event of any passenger wishing to disembark, or sickness among the crew, the Deputy Health Officer is informed.

(135) The total number of passenger steamers calling at Tumpat was 224 with 211 passengers, 48 of whom were Europeans. All were examined but no case of infectious disease was seen.

## SECTION V. MATERNITY AND CHILD WELFARE.

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(136) There is no organised child welfare work, as we have not been able to make provision for regular out-door visiting.

(137) In Kota Bharu infants are now seen on any morning at the Female Hospital, and the number of parents availing themselves of this has shown a steady increase.

(138) During the year 52 infants were brought to this clinic, the total attendances being 219.

(139) The majority of infants were Chinese (42), though there were 3 Malays (who accounted for 72 of the attendances), 3 Japanese, 3 Indians and 1 Arab.

(140) Maternity work in the State Hospitals has also increased.

This year there were 45 midwifery cases (compared with 39 in 1932 and 32 in 1931).

Of these 45 labours, 36 were conducted in the Kota Bharu Hospital and 9 in Kuala Krai Hospital.

The majority were Indians (26) and Chinese (11). 4 were Japanese, 1 Siamese and 1 Malay. Two were European cases in the Kota Bharu European Hospital.

(141) As pointed out in previous reports, Malays have considerable faith in their own methods of midwifery, and are still averse to entering institutions for childbirth. There is still also considerable prejudice against more modern methods, especially among the older people - whose influence over the more enlightened younger generation is very strong.

This year, however, two Malay women in Kota Bharu were attended to throughout labour by Staff Nurses from the Hospital, while 4 others were attended in the puerperal period.

## SECTION VI. HOSPITALS AND DISPENSARIES.

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### A. GENERAL.

(142) A new out-door dispensary was opened at Pasir Mas on September 1st.

This town which has a population of over 1200 is the market centre for a large agricultural area. As it is situated on the west bank of the Kelantan River, it is not directly accessible by road, and only a few patients would go to the trouble and expense of crossing the river to attend at the travelling dispensary station on the East bank.

The want of a fixed dispensary at Pasir Mas has therefore long been felt, and as shown in para 134 it is already very popular.

(143) The following is a list of the hospitals and dispensaries maintained by the Government:—

**Kota Bharu.**

A General Hospital (male) 192 beds (with “first” and “second class” wards and special ward for sick convicts).

A small European Hospital.

Female Hospital 60 beds (Malay ward, non-Malay ward, and “first” and “second class” wards).

Mental Diseases Hospital (two male wards, one female ward and 6 cells).

Isolation Hospital (two wards).

**Kuala Krai.**

A District Hospital (56 beds).

**Tumpat.**

An Out-door Dispensary with emergency ward (two beds) and quarantine camp.

**Pasir Puteh.**

An Out-door Dispensary.

**Pasir Mas.**

An Out-door Dispensary.

**A Travelling Dispensary.**

**B. CASES TREATED.**

(144) 5559 in-patients were treated in these hospitals (compared with 5545 in 1932) and there were 199431 attendances at the dispensaries including travelling dispensary (compared with 229155 in 1932).

**Assault Cases.**

(145) 852 assault cases were dealt with during the year (compared with 928 in 1932). In the majority of these only minor injuries had been caused. 627 were inflicted by blunt instruments and 70 by fists etc. 65 were caused by heavy sharp instruments such as parangs and klewangs, 1 by a spear while 81 were knife wounds. 8 were caused by biting - a not unusual form of assault by Malay women.

**Road Accidents Etc.**

(146) 17 cases were admitted following motor car accidents (non fatal) while 2 were injured by trains 1 of whom died.

**Injuries by Animals.**

(147) There were 4 cases of mauling by tigers. Two were admitted to Kota Bharu Hospital of whom 1 died, and 1 to Kuala Krai Hospital who recovered, while 1 died on the way to hospital. All were Malays.

5 cases gored by buffaloes or bulls and 2 cases gored by wild boars were admitted to Government hospitals.

19 cases were treated for dog bites and 4 for monkey bites (the large “Berok” used by Malays for collecting coconuts).



Dead Bodies.

(148) 33 dead bodies were brought in for examination (compared with 57 in 1932). In 10 of these, death was due to drowning, 4 accidents of various sorts, 15 assaults (7 with blunt weapons, 6 with heavy sharp weapons and 2 by strangulation), 2 suicide while in 2 cases death was due to natural causes. The suicides were both Chinese one of whom hanged himself, while the other (a gold-smith) took potassium cyanide.

C. DETAILS OF WORK DONE IN GOVERNMENT HOSPITALS AND DISPENSARIES.

(149) This year, total attendances are given as in previous years for comparison, but, new cases are also given, as it is considered that the introduction of out-patient cards has made the recording of these more reliable.

(a) European Hospital.

(150) 25 patients were admitted compared with 20 in 1932 and 26 in 1931.

(151) Of these, 6 were planters, 11 government servants (including wives and children of these groups).

(152) Of the 25 cases treated 7 were males and 18 females.

(153) Only 3 were admitted for malaria (all cases of sub-tertian from estates).

(154) There were 2 maternity cases.

(155) No death occurred.

(b) Kota Bharu Hospital (Male).

(156) 2745 new cases were admitted during the year, which with 123 remaining on January 1st gives a total of 2868 treated (compared with 2846 in 1932).

(157) The accommodation, apart from general wards, was improved this year. There is now a "First Class Ward" where the charge is \$2.50 per day and a "Second Class Ward" where \$1.00 per day is charged. The latter has proved especially popular with local tradesmen.

The number of patients admitted to these wards was:—

1st Class 210 of whom 137 were Kelantan Government Servants  
and 51 F. M. S. Railways Personnel.

2nd Class 219 of whom 125 were Kelantan Government Servants  
and 29 F. M. S. Railways Personnel.

Deaths.

(158) There were 59 deaths giving a death rate of 2.05%. Excluding 12 deaths which occurred within 48 hours of admission, the death rate was 1.63% (compared with 2.11 in 1932), 22 of these deaths were due to pulmonary tuberculosis.

(159) The most prevalent diseases were:—

Malarias. 322 cases with 7 deaths.

Ankylostomiasis. 445 with 13 deaths.

Venereal Diseases. 312 cases with no death.

Chronic Ulcers. 832 cases with no death.

Pulmonary Tuberculosis. 92 cases with 22 deaths.

(160) Thirty nine major operations were performed under chloroform anaesthesia and 363 minor operations with local anaesthesia.

Out-Patients.

(161) The number of attendances at the dispensary was 50,365 (compared with 61,082 in 1932). Of these 80.73% were Malays. The number of new cases was 42,430.

Female Hospital, Kota Bharu.

(162) 684 patients were admitted, which with 37 remaining on January 1st. gives a total of 721 treated (compared with 618 in 1932). 67.39% of these were Malays.

(163) There were 18 deaths giving a death rate of 2.49%. Excluding 4 deaths which occurred within 48 hours of admission, the death rate was 1.95%. (compared with 1.13% in 1932).

(164) 37 of the above cases were admitted to the First and Second Class Wards, of whom 9 were dependents of F. M. S. Railway Officers and 12 of Government Officers.

(165) There were 34 maternity cases (compared with 27 in 1932). 17 of these were Indians, 11 Chinese, 1 Malay, 4 Japanese and 1 Siamese.

Kuala Krai Hospital.In-Patients.

(166) 1,832 patients were admitted during the year, which, with 65 remaining on January 1st gives a total of 1,897 treated (compared with 1,989 in 1932). Only 21.19% of these were Malays, the majority being Chinese (37.32%) and Indians (39.21%) 147 patients were sent in from rubber estates and 207 by F. M. S. Railway. 434 patients were residents of Kuala Krai town (41.70% of whom were Chinese).

(167) There were 89 deaths giving a death rate of 4.69%. Excluding 27 deaths which occurred within 48 hours of admission, the death rate was 3.27%. (compared with 2.56% in 1932).

(168) 1 major operation and 172 minor operations were performed.

(169) There were 186 female patients including 9 maternity cases.

The majority of the female patients were Indians (86); but it is gratifying to see that this ward is becoming more popular with Malays (72 admissions).

(170) The most prevalent diseases:—

Malarias. 631 cases with 27 deaths.  
Ankylostomiasis. 53 cases with 2 deaths.  
Venereal Diseases. 76 cases with 1 death.  
Chronic Ulcers. 311 cases with 2 deaths.  
Lung Diseases. 120 cases with 34 deaths.  
Beri-Beri. 1 case with no death.  
Dysenteries. 35 cases with no death.

Out-Patients.

(171) The total number of attendances at the dispensary was 20,549 (compared with 18,653 in 1932). The number of new cases was 17,597.

(172) A dresser from this hospital visits Kampong Pek and Temangan once a week for out-door treatment. There were 2,719 attendances at these centres, the commonest ailments being yaws (445) ulcers (641) malaria (clinical) (375) intestinal-worms (410) and bronchitis (84).

These patients come from the rural areas near these villages and practically all are Malays.



Pasir Puteh Dispensary.

(173) There were 18,556 attendances (compared with 18,539 in 1932) 16,878 of these were by Malays and 25 by Europeans. The number of new cases was 6,197.

(174) The commonest ailments were yaws (1,995 attendances), malaria (3,599), intestinal parasites (1,642) and ulcers (12,697). Only 18 cases of dysentery and 40 cases of venereal diseases were seen.

(175) 87 assault cases were attended to. Of these 7 were serious and were sent to Kota Bharu Hospital.

(176) The Dresser-in-Charge, in addition to his dispensary work, visited Cherang Ruku once a week (except during the wet monsoon months) using a hired car.

Tumpat Dispensary.

(177) There were 22,449 attendances at the dispensary (compared with 21,601 in 1932). The number of new cases was 10,334.

(178) Of these 13,910 or 61.02% were by Malays and 120 by Europeans.

(179) The commonest diseases were:—

Yaws. 1,561 attendances.

Malaria. 1,157 attendances.

Venereal Diseases. 660 attendances.

(180) There were 121 assault cases, 79 of whom were Malays. In most of these only minor injuries had been caused.

(181) The Dresser-in-Charge is also Deputy Health Officer and inspects passengers from all ships.

He is also in charge of the isolation and leper camps.

Pasir Mas Dispensary.

(182) There were 11,079 attendances at the dispensary from the date of its opening (1st September, 1933). The number of new cases was 10,079.

(183) Of these 9,929 or 89.52% were by Malays.

(184) The commonest diseases were:—

Yaws. 1,252 attendances.

Malaria. 337 attendances.

Venereal Diseases. 237 attendances.

Travelling Dispensary.

(185) 32 centres were visited weekly by the motor travelling dispensary.

(186) This continues to be very popular, and there was a total of 76,433 attendances (compared with 103,994 in 1932).

(187) The great majority were of course Malays (73,378) but there were 1,721 attendances by Chinese, most of these being people who have long been settled as padi planters among the Malays in the Salor area.

(188) 12,552 were treated for yaws, 5,896 of whom were given injections of neosalvarsan, the remainder being young infants who were treated with stovarsal.

(189) The other commoner diseases were skin diseases 11,334, "malaria" 10,524, eye diseases 2,797, intestinal-worm 10,972 (round-worm 9,915 and hook-worm 1,057).

(190) 1,237 attended for vaccination.

(191) It will be seen that the comprehensive term of "skin diseases" accounts for a very large proportion of cases.

(192) The majority of these are tinea infections of various kinds. The commonest form seen is what the Malays call "Panau" or "Badam Bunga" apparently Pityriasis versicolor-but as this causes little if any irritation, and the light patches of skin resulting from it are not objected to, treatment is not often sought for the complaint. More acute cases with more marked scaliness and itching are referred to as "Sopak or Badam Bekal". Tinea imbricata and Tinea circinata are only rarely seen.

(193) "Kedal" (or "Kedai" as it is called by the Kelantan Malay) is a more severe Trichophyton infection. It occurs on the soles and palms and spreads to the dorsa of the feet and hands. It has a well defined margin and as it always itches, treatment is appreciated.

(194) There is a strong tendency among the Malays to believe that salvarsan injections are efficacious for these various affections, and especially for a condition of the feet known as "Burok Chelapak". This, which is also extremely common, consists of a thickening of the soles of the feet with pitting of the surface (very occasionally seen on palms of hands). It is sometimes considered to be a manifestation of yaws and may be cured by salvarsan, but, as it is usually associated with erosion of the nails known by Malays as "Sabayan", and which is probably due to Tinea unguium, it is more likely that the etiology of both is probably a fungus. In support of this is the fact that the Malays are often unable to decide whether a case is severe "Kedai" or mild "Chelapak".

The thickened sole frequently cracks transversely, leading to painful fissures. The complaint is then known as "Patah Jentang".

It is not unusual to see a man the sole of whose foot has been "cobbled" with strong twine sutures for this condition.

Salvarsan injections certainly appear to be definitely efficacious in many cases of "Patah Jentang", and these are probably cases of yaws. On the other hand it is occasionally seen in those who have no other signs of yaws and may heal well with such preparations as a carbol fuchsin paint.

(195) "Balai" means leucodermia here, and is common, but as it causes no symptoms treatment is rarely sought for this.

(196) Scabies "Kudis Gatal" is recognised by the Malays owing to its acute onset and severe itching. This is also common, though less so than the fungus diseases mentioned above, accounting for about a third of the total "Skin diseases" attending the travelling dispensary.

(197) The travelling dispensary was withdrawn during the Mohammedan fasting month (4 tours) as so few patients attend during this period and had to be suspended until 1st February and after 8th November during the North-East Monsoon owing to heavy rains.

(198) Detailed statistics are given in Appendix VI.

## SECTION VII. PRISONS AND ASYLUMS.

### A. HEALTH OF PRISONERS.

(199) There are special convict wards in Kota Bharu and Kuala Krai hospitals to which all sick prisoners are sent for treatment.

(200) No epidemic diseases occurred in any of the prisons.



(201) In Kota Bharu the total number of prisoners under detention was 768 (compared with 832 in 1932).

(202) There were 313 admissions to Hospital (compared with 324 in 1932) - mostly for minor complaints-with one death from pneumonia.

(203) In Kuala Krai out of 209 prisoners 31 were admitted to Hospital, (compared with 51 out of 218 prisoners in 1932). There were no deaths.

#### B. MENTAL DISEASES HOSPITAL.

(204) For the last 10 years the figures are as follows:—

<u>Year.</u>	<u>No: of admissions.</u>	<u>Average No: detained.</u>
1924	18	12
1925	33	13
1926	45	14
1927	44	16
1928	53	18
1929	39	20
1930	44	28
1931	65	36
1932	69	46
1933	52	36

(205) Our accommodation consists of 2 male and 1 female wards and 6 masonry cells. The average daily number of cases was 36 with a maximum of 44. Unfortunately expansion of this accommodation is not possible at present.

(206) As pointed out last year, it is generally recognised that the ideal procedure would be to transfer all our lunatics to a Mental Hospital in the Straits Settlements or Federated Malay States using our wards as observation wards only, or, at most, only detaining such cases as are likely to get well quickly.

(207) Apart from the fact that there is always considerable opposition on the part of relatives to such transfer, the cost of transfer and maintainance is too high to allow this ideal to be carried put. It is however followed as far as possible, and it will be seen that 9 male cases were transferred to the Singapore Mental Hospital during the year, and that we now maintain 40 cases in the Straits Settlements and Federated Malay States.

#### Statistics of Mental Cases treated in 1933.

(208) (a) 34 cases remained on January 1st.

(209) 52 were admitted during the year giving a total of 86 cases dealt with (75 males and 11 females).

(210) Of these 9 males were transferred to the Singapore Mental Hospital, 40 were discharged 2 died and 35 remained at the end of the year (31 males and 4 females).

(211) (b) Maintained at Central Mental Hospital, Tanjong Rambutan.

8 remained on January 1st. 1933.

1 died during the year.

7 remained at the end of the year, (5 males and 2 females).

(212) (c) Maintained at Mental Hospital, Singapore.

27 remained on January 1st 1933.

9 were transferred during the year.

1 was discharged during the year.

2 died during the year.

33 remained at the end of the year, (26 males and 7 females)



C. ISOLATION CAMP.

(213) 2 cases of chicken-pox and 8 cases of measles were isolated in these wards during the year.

D. LEPER ASYLUM.

(214) The statistics for lepers are as follows:—

(a) Leper Wards at Tumpat.

4 remained on January 1st 1933.  
8 were admitted during the year making a total of 12 treated.  
1 was discharged.  
7 absconded.  
1 died.  
3 remained at the end of the year.

(215) (b) Maintained at Pulau Jerejak.

16 remained on January 1st 1933.  
3 were discharged.  
2 died.  
11 remained at the end of the year.

(c) Maintained at Sungei Buloh.

4 cases remained on January 1st 1933.  
1 died.  
3 remained at the end of the year.

(d) Malays who are isolated privately.

Previously certified	21
New cases seen during the year	<u>15</u>
Total	<u>36</u>

## SECTION VIII.

METEOROLOGICAL.

## METEOROLOGICAL.

(216) The following are the observations made at Kota Bharu (supplied by the Meteorological Officer, Kuala Lumpur).

Temperature:—

The mean maximum was 87.3°F  
The mean minimum was 72.7°F

The highest temperature recorded was 94°F on several occasions, and the lowest 65°F on several occasions in February, 1933.

The total rainfall was 126.74 inches; the greatest fall in 24 hours being 7.24 inches on 17th November, 1933, (a clinical summary is given in appendix XII).

## SECTION IX.

VETERINARY.

## VETERINARY.

(217) A report by the Veterinary Inspector is given in Appendix X.

(218) With regard to anthrax in cattle, no prophylactic inoculations have been done since 1931, as the epidemic of the previous few years was then considered to be controlled.

Last year there were only 6 sporadic cases and this year (the first for many years) no case was reported.

(219) Prophylatic inoculation of dogs against rabies was not compulsory this year, but was advised, and was given to 70 dogs during the year (at a charge of \$1.00 per dog).

(220) The most striking event in the Veterinary Inspector's Report is the increase in the cattle export trade.

(221) By arrangement with the Principal Veterinary Officer, Straits Settlements and Federated Malay States, the following procedure has been adopted in the case of cattle exported by train:—

(a) The Kelantan Veterinary Inspector examines cattle at the railway station most convenient for the exporter and issues the necessary certificates.

(b) The Government Veterinary Officer, Kuala Lipis is informed by wire of the date of export.

(c) Quarantine is not insisted on at Merapoh, the cattle, if found to be healthy, being allowed to proceed to their destination where quarantine is carried out.

(222) This year while the export by sea shows a slight reduction (217 compared with 253 in 1932), that by rail was 2720 head compared with only 24 in 1932.

(223) 612 goats and 146 sheep were also exported to the Federated Malay States and Straits Settlements by train, (compared to only 3 and 2 respectively in 1932).

(224) In addition to these Kelantan animals, cattle are now frequently transported from Siam to the Federated Malay States and Straits Settlements by train through Kelantan - 1338 head during the year.

These cattle are required to be quarantined at the Siam - Kelantan border for two weeks, and are then examined by the Kelantan Veterinary Inspector whose certificate is necessary before transport through Kelantan is authorised.

## APPENDIX I.

### STATE HOSPITAL.

Chief Medical Officer			
Hospital Assistants	...	...	two
Dresser Grade I	...	...	one
Dresser Grade II	...	...	one
Dressers Grade III	...	...	five
Probationer Dressers	...	...	four
Dispenser Grade II	...	...	one
Laboratory Dresser Grade II	...	...	one
Veterinary Inspector	...	...	one
Clerical Staff	...	...	four
Asst: Store - Keeper	...	...	one
Travelling Dispenser	...	...	one
Vaccinator	...	...	one
Peons	...	...	three
Attendants	...	...	seventeen
Cooks	...	...	three
Gardeners	...	...	four
Bullock Cart Driver	...	...	one
Toties	...	...	three
Tukang Ayers	...	...	five
Watchman	...	...	one

EUROPEAN HOSPITAL and ASIATIC FEMALE WARDS.

Matron (assists in supervision of Female Hospital)			
Staff Nurses	...	...	two
Cook (European Hospital)	...	...	one
Boys ( -do- )	...	...	two
Servants to Matron	...	...	two
Attendants (Female)	...	...	five
Cook (Female Hospital)	...	...	one
Tukang Ayer (European Hospital)	...	...	one
Gardener (European Hospital)	...	...	one
Toty	...	...	one
Watchman (Female Hospital)	...	...	one

KUALA KRAI HOSPITAL.

Medical Officer	...	...	one
Hospital Assistant	...	...	one
Dressers Grade III	...	...	two
Attendants	...	...	six
Attendant (Female)	...	...	one
Cooks	...	...	two
Toties	...	...	two
Gardener	...	...	one
Watchman	...	...	one

TUMPAT DISPENSARY.

Deputy Health Officer	...	...	one
Attendant	...	...	one
Watchman	...	...	one

PASIR PUTEH DISPENSARY.

Dresser-in-Charge	...	...	one
Attendant	...	...	one

PASIR MAS DISPENSARY.

Dresser - in - Charge	...	...	one
Attendent	...	...	one

TRAVELLING MOTOR DISPENSARY.

Driver	...	...	one
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ANTI - MALARIAL WORKS, KOTA BHARU.

Sanitary Inspector	...	...	one
Mandore	...	...	one
Coolies	...	...	eight

ANTI - MALARIAL WORKS, KUALA KRAI.

Sanitary Inspector	...	...	one
Mandore	...	...	one
Coolies	...	...	seven



APPENDIX II.REVENUE, 1933.KOTA BHARU.

Hospital Fees	...	...	...	\$5,272 .98
Sale of Medicines	...	...	...	\$1,288 .05
Licence Fees	...	...	...	\$340 .00
Misc: Receipts (Births & Deaths)			...	\$63 .00
Misc: Receipts	...	...	...	<u>\$26 .98</u>
				\$6,991 .01

TUMPAT.

Hospital Fees	...	...	...	\$17 .00
Sale of Medicines	...	...	...	\$962 .72
O. D. D. R.	...	...	...	<u>\$59 .40</u>
				\$1,039 .12

PASIR MAS.

Sales of Medicines	...	...	...	<u>\$10 .46</u>
				\$10 .46

KUALA KRAI.

Hospital Fees	...	...	...	\$2,302 .70
Sale of Medicines	...	...	...	\$467 .83
Misc: Receipts	...	...	...	<u>\$7 .50</u>
				\$2,778 .03

PASIR PUTEH.

Sale of Medicines	...	...	...	<u>\$21 .90</u>
				<u>\$21.90</u>

Total \$10,840 .44

EXPENDITURE, 1933.

A. Personal Emoluments	...	...	...	...	\$51,473.29
Allowance Travelling and Personal	...	...	...	...	\$3,009.98
Allowance Motor Car	...	...	...	...	\$784.29
Allowance Motor Cycle	...	...	...	...	\$1,080.00
Allowance Bicycle	...	...	...	...	\$96.00
Allowance Rations to Nurses	...	...	...	...	\$1,140.00
Allowance for Sisters (Washing)	...	...	...	...	\$480.00
Allowance to Sisters (Transport)	...	...	...	...	\$1,000.00
Allowance to Dr. W. J. Geale	...	...	...	...	\$2,400.00
Anti-Malarial Works	...	...	...	...	\$3,120.59
Contingent Expenses	...	...	...	...	\$839.04
Diets and Extras	...	...	...	...	\$15,870.32
Equipments	...	...	...	...	\$3,418.21
Laundry	...	...	...	...	\$1,320.00
Lighting	...	...	...	...	\$3,626.95
Medicines and Instruments	...	...	...	...	\$31,146.12
Maintainance of Lunatics and Lepers	...	...	...	...	\$11,480.71
Maintainance of Travelling Dispensary	...	...	...	...	\$650.00
Uniforms	...	...	...	...	\$888.10
Wages Hospital Servants	...	...	...	...	\$17,319.76
Temporary Allowance	...	...	...	...	\$1,609.05
Transfer of Lunatics	...	...	...	...	\$219.35
				Total	<u>\$152,971.76</u>



## APPENDIX III.

## GOVERNMENT OF KELANTAN.

RETURN of SICK (In-door) of the Government Hospital in Kelantan  
for the year Ending 31st December, 1933.

Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Infective Diseases.	Cerebrospinal fever	..	..	..	..	..		40	40	40					
	Chicken-pox	..	..	..	..	..									
	Cholera	..	..	..	..	..									
	Dengue	..	..	..	..	..									
	Dysentery A.	..	..	..	..	..	1	72	73	66			3	4	
	Dysentery B.	..	..	..	..	..		6	6	5			1		
	Enteric fever	..	..	..	..	..		11	11	9			1	1	
	Erysipelas	..	..	..	..	..		2	2	2					
	Gonorrhoea	..	..	..	..	..	13	191	204	197				7	
	Gonorrhoeal rheumatism	..	..	..	..	..	5	24	29	29					
	Gonorrhoeal conjunctivitis	..	..	..	..	..		7	7	7					
	Hydrophobia	..	..	..	..	..		1	1				1		
	Coryza	..	..	..	..	..		148	148	146				2	
	Leprosy	..	..	..	..	..	5	14	19	7	1	7	1	3	
	Madura disease	..	..	..	..	..									
	Malaria—														
	(a) Benign tertian	..	..	..	..	..	1	57	58	56				2	
	(b) Quartan	..	..	..	..	..		19	19	19					
	(c) Malignant tertian	..	..	..	..	..	2	320	322	302			18	2	
	(d) Mixed infection	..	..	..	..	..		6	6	5				1	
	(e) Type undiagnosed	..	..	..	..	..	6	434	440	421		1	3	15	
	(f) Malarial cachexia	..	..	..	..	..	3	116	119	103			12	4	
	(g) Blackwater fever	..	..	..	..	..		3	3	2			1		
	Measles	..	..	..	..	..		13	13	12		1			
	Mumps	..	..	..	..	..		1	1	1					
	Phagedoena	..	..	..	..	..									
	Plague	..	..	..	..	..									
	Pneumonia	..	..	..	..	..	11	124	135	93	1		36	5	
	Pyæmia	..	..	..	..	..									
	Pyrexia of uncertain origin	..	..	..	..	..		1	1				1		
	Rheumatism	..	..	..	..	..		6	6	6					
	Septicæmia	..	..	..	..	..		2	2				2		
	Small-pox	..	..	..	..	..									
	Syphilis—														
	(a) Primary	..	..	..	..	..	3	58	61	58				3	
	Carried forward	..					50	1676	1726	1586	2	9	80	49	

Class.	Specific Diseases .						Remained .	Admitted .	Total .	Discharge .	Transferred .	Absconded .	Died .	Remaining .	Remark	
Infective Diseases—(contd.)	Brought forward ..						50	1676	1726	1586	2	9	80	49		
	{	(b) Secondary	..	..	..	..		31	31	30				1		
		(c) Tertiary	..	..	..	..	4	31	35	29			1	5		
		Tetanus	..	..	..	..	..									
		Tuberculosis—														
		(a) General	..	..	..	..	..	1	1	2	2					
		(b) Phthisis	..	..	..	..	..	5	98	103	67	5		23	8	
		Whooping Cough	..	..	..	..	..									
		Yaws	..	..	..	..	..	26	510	536	513				23	
		Other Infective Disease						..	..	..						
Intoxications.	{	Alcoholism	..	..	..	..		2	2	2						
		Mercury, chronic poisoning by						..	..							
		Morphinism	..	..	..	..	..									
		Other Intoxications						..	..	..	..					
General Diseases not included in the two preceding Groups.	{	Anaemia	..	..	..	..	..		13	13	9		3	1		
		Beri-beri	..	..	..	..	..	1	2	3	2				1	
		Diabetes	..	..	..	..	..	1	3	4	4					
		General Debility	..	..	..	..	..		7	7	4		3			
		Leucocythaemia	..	..	..	..	..									
		Lymphadenoma	..	..	..	..	..									
		Osteo-arthritis	..	..	..	..	..									
		Other General Diseases						..	..	..						
Certain Morbid Con- ditions incident to Various parts.	{	Malformations		..	..	..	..									
		New Growth, Non-malignant		..	..	..		6	6	6						
		-Do-	Malignant	..	..	..	1	2	3	3						
		Cyst	..	..	..	..	..		17	17	17					
Diseases of the Nervous System.	Nerves.	Other Morbid Conditions						..	..	..						
		{	Neuritis	..	..	..	..	..		4	4	4				
			Multiple Neuritis	..	..	..	..	..								
	Other Diseases of the Nerves						..	..								
	Spinal Cord and Mem- branes.	Meningitis						..	..	..	..					
		Myelitis	..	..	..	..	..		6	6	3		2	1		
		Primary lateral sclerosis						..	..	..						
		Locomotor ataxia	..	..	..	..	..									
		Insular sclerosis	..	..	..	..	..									
		Other Diseases of Spinal Code and Membranes						..	..	..	..	..				
		{	Concussion of Brain						..	..	..					
			Haemorrhage						..	..	..	..			2	
	Abscess						..	..	..	..	..					
	Hydrocephalus						..	..	..	..						
	Other Diseases of Brain and Membranes						..		1	1	1					
Carried forward ..						89	2415	2504	2285	7	9	114	89			



Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
	<i>Brought forward</i> ..						89	2415	2504	2285	7	9	114	89	
Nervous Disorders.	Apoplexy	..	..	..	..	..									
	Paraplegia	..	..	..	..	..	1	4	5	4				1	
	Hemiplegia	..	..	..	..	..	1	4	5	3			1	1	
	Monoplegia	..	..	..	..	..									
	Chorea	..	..	..	..	..									
	Convulsions	..	..	..	..	..		2	2				2		
	Epilepsy	..	..	..	..	..		1	1	1					
	Neuralgia	..	..	..	..	..		3	3	3					
	Hysteria	..	..	..	..	..									
	Neurasthenia	..	..	..	..	..									
	Other Nervous Disorders	..	..	..	..	..		4	4	4					
	Idiocy	..	..	..	..	..									
Mental Diseases.	Mania	..	..	..	..	..		3	3	3					
	Melancholia	..	..	..	..	..		11	11	10				1	
	Delusional insanity	..	..	..	..	..		1	1	1					
	General paralysis of the insane	..	..	..	..	..									
	Dementia	..	..	..	..	..									
	Other Mental Diseases	..	..	..	..	..									
Diseases of the Eye.	Conjunctivitis	..	..	..	..	..		28	28	26				2	
	Trachoma	..	..	..	..	..									
	Keratitis	..	..	..	..	..		2	2	2					
	Ulcer of cornea	..	..	..	..	..	1	4	5	4				1	
	Opacity of cornea	..	..	..	..	..		2	2	2					
	Staphyloma	..	..	..	..	..									
	Iritis	..	..	..	..	..		1	1	1					
	Glaucoma	..	..	..	..	..									
	Hypopyon	..	..	..	..	..		1	1	1					
	Optic neuritis	..	..	..	..	..		1	1					1	
	Optic atrophy	..	..	..	..	..									
	Cataract	..	..	..	..	..		3	3	3					
	Panophthalmitis	..	..	..	..	..									
	Amblyopia and Amaurosis	..	..	..	..	..									
	Errors in Refraction	..	..	..	..	..									
	Blepharitis	..	..	..	..	..									
	Entropion	..	..	..	..	..									
	Other Eye Diseases	..	..	..	..	..	1	1	2	2					
	Inflammation	..	..	..	..	..		3	3	3					
	Other Ear Diseases	..	..	..	..	..		4	4	4					
of the Nose.	Inflammation	..	..	..	..	..		1	1	1					
	Other Nose Diseases	..	..	..	..	..									
	<i>Carried forward</i> ..						93	2499	2592	2363	7	9	117	96	

Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharge.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
	<i>Brought forward</i> ..						93	2499	2592	2363	7	9	117	96	
Diseases of the Circulatory System.	Pericarditis	..	..	..	..	..									
	Endocarditis	..	..	..	..	..									
	Valvular Disease	..	..	..	..	..									
	Myocarditis	..	..	..	..	..									
	Dilatation of Heart	..	..	..	..	..									
	Syncope	..	..	..	..	..									
	Disordered action of Heart	..	..	..	..	..		1	1	1					
	Aneurysm	..	..	..	..	..	1		1	1					
	Phlebitis	..	..	..	..	..									
	Thrombosis	..	..	..	..	..									
	Varix	..	..	..	..	..									
	Other Diseases of the System	..	..	..	..	..		1	1	1					
Diseases of the Respiratory System.	Asthma	..	..	..	..	..	2	49	51	46				5	
	Laryngitis	..	..	..	..	..		3	3	3					
	Bronchitis	..	..	..	..	..	3	169	172	166		1	1	4	
	Broncho-pneumonia	..	..	..	..	..		8	8	7			1		
	Gangrene of lung	..	..	..	..	..									
	Pleurisy	..	..	..	..	..		6	6	6					
	Empyema	..	..	..	..	..		2	2	1			1		
	Other Diseases of the System	..	..	..	..	..		5	5	4			1		
Diseases of the Digestive System.	Stomatitis	..	..	..	..	..		5	5	4			1		
	Ulceration of month	..	..	..	..	..		1	1	1					
	Gangrene of mouth	..	..	..	..	..									
	Pyorrhœa alveolaris	..	..	..	..	..		9	9	9					
	Caries of tooth	..	..	..	..	..		9	9	9					
	Ulceration of tongue	..	..	..	..	..									
	Sore throat	..	..	..	..	..									
	Tonsillitis	..	..	..	..	..		6	6	6					
	Inflammation of pharynx	..	..	..	..	..		7	7	7					
	Gastritis	..	..	..	..	..		3	3	3					
	Ulceration of stomach	..	..	..	..	..		1	1	1					
	Dyspepsia	..	..	..	..	..		17	17	17					
	Enteritis	..	..	..	..	..									
	Appendicitis	..	..	..	..	..									
	Colitis	..	..	..	..	..		4	4	4					
	Uleeration of intestines	..	..	..	..	..		1	1	1					
	Sprue	..	..	..	..	..									
	Hernia	..	..	..	..	..		7	7	7					
	Intestinal obstruction	..	..	..	..	..		2	2				2		
	Diarrhœa	..	..	..	..	..	1	16	17	15			2		
	<i>Carried forward</i> ..						100	2831	2931	2683	7	10	126	105	



Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Diseases of the Digestive System—(cont.)	<i>Brought forward</i> ..						100	2831	2931	2683	7	10	126	105	
	Constipation .. .. .	..	..	..	..	..		10	10	10					
	Colic .. .. .	..	..	..	..	..	1	9	10	10					
	Ischio-rectal Abscess .. .. .	..	..	..	..	..		1	1	1					
	Ulcer of anus .. .. .	..	..	..	..	..									
	Imperforate anus .. .. .	..	..	..	..	..		2	2	2					
	Fistula in ano .. .. .	..	..	..	..	..	1	1	2	2					
	Hemorrhoids .. .. .	..	..	..	..	..	1	8	9	9					
	Hepatitis .. .. .	..	..	..	..	..		12	12	11	1				
	Abscess of liver .. .. .	..	..	..	..	..		4	4	3	1				
	Cirrhosis of liver .. .. .	..	..	..	..	..		2	2				2		
	Congestion of liver .. .. .	..	..	..	..	..									
	Jaundice .. .. .	..	..	..	..	..		4	4	3				1	
	Gall stones .. .. .	..	..	..	..	..									
	Peritonitis .. .. .	..	..	..	..	..		1	1				1		
	Ascites of unknown origin .. .. .	..	..	..	..	..	1	4	5	4			1		
	Other Diseases of the System .. .. .	..	..	..	..	..		1	1	1					
	Spleen, Inflammation .. .. .	..	..	..	..	..									
	Spleen, Rupture .. .. .	..	..	..	..	..									
Diseases of the Lymphatic System.	Bubo .. .. .	..	..	..	..	..	13	86	99	92				7	
	Suppuration of Glands .. .. .	..	..	..	..	..									
	Lymphangitis .. .. .	..	..	..	..	..		2	2	2					
	Other Diseases of the System .. .. .	..	..	..	..	..									
	DISEASES OF THE THYMUS .. .. .	..	..	..	..	..									
Diseases of the Urinary System.	DISEASES OF THE THYROID BODY .. .. .	..	..	..	..	..									
	DISEASES OF THE ADRENALS (Supra-renals) .. .. .	..	..	..	..	..									
	Acute Nephritis .. .. .	..	..	..	..	..		1	1					1	
	Bright's disease .. .. .	..	..	..	..	..									
	Cystitis .. .. .	..	..	..	..	..		4	4	4					
	Calculus .. .. .	..	..	..	..	..		1	1	1					
	Retention of urine .. .. .	..	..	..	..	..									
	Incontinence of urine .. .. .	..	..	..	..	..	1		1	1					
	Other Diseases of the System .. .. .	..	..	..	..	..		1	1	1					
	Stricture .. .. .	..	..	..	..	..	1	2	3	3					
Diseases of the Generative System. <i>Male.</i>	Urethral fistula .. .. .	..	..	..	..	..	1	2	3	3					
	Extravasation of urine .. .. .	..	..	..	..	..									
	Phimosi s .. .. .	..	..	..	..	..		2	2	1				1	
	Ulcer Penis .. .. .	..	..	..	..	..		2	2	2					
	Soft chancre .. .. .	..	..	..	..	..		31	31	29				2	
	Scrotum, Abscess .. .. .	..	..	..	..	..		3	3	3					
	Do, Sloughing .. .. .	..	..	..	..	..		1	1				1		
	<i>Carried forward</i> ..						120	3028	3148	2881	9	10	131	117	

Class.	Specific Diseases.					Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.	
Diseases of the Generative System—(cont.)	Male - (cont.)	Brought forward ..					120	3028	3148	2881	9	10	131	117	
		Hydrocele .. .. .	..	..	..	..	1	7	8	8					
		Orchitis .. .. .	..	..	..	..	2	19	21	21					
		Epididymitis .. .. .	..	..	..	..		6	6	6					
		Other Disases Male Organs .. .. .	..	..	..	..		1	1	1					
	Female.	Metritis .. .. .	..	..	..	..		2	2	2					
		Erosion of cervix .. .. .	..	..	..	..		1	1	1					
		Displacements and distortions .. .. .	..	..	..	..		1	1	1					
		Vulva, Inflammation .. .. .	..	..	..	..									
		Do. Abscess .. .. .	..	..	..	..									
		Do. Ulcer .. .. .	..	..	..	..									
		Do. Soft Chancre .. .. .	..	..	..	..									
		Other Diseases Female Organs .. .. .	..	..	..	..		5	5	5					
		Natural Labour .. .. .	..	..	..	..		41	41	36			2	3	
		Difficult Labour .. .. .	..	..	..	..		1	1	1					
	Abortion .. .. .	..	..	..	..		2	2	2						
	Rupture perineum .. .. .	..	..	..	..										
	Retention of placenta .. .. .	..	..	..	..		1	1	1						
	Still-birth .. .. .	..	..	..	..		1	1	1						
	Premature birth .. .. .	..	..	..	..										
	Post-partum hæmorrhage .. .. .	..	..	..	..										
	Puerperal sapræmia .. .. .	..	..	..	..										
	Other Affections .. .. .	..	..	..	..		7	7	7						
Affections connected with Pregnancy and Parturition.	DISEASES OF THE FEMALE BREAST .. .. .					..									
	DISEASES OF THE MALE BREAST .. .. .					..									
	Diseases of the Organs of Locomotion.	Periostitis .. .. .	..	..	..	..		3	3	3					
		Caries of bones .. .. .	..	..	..	..									
		Necrosis of bones .. .. .	..	..	..	..		1	1					1	
		Arthritis .. .. .	..	..	..	..	6	47	53	51				2	
		Synovitis .. .. .	..	..	..	..		8	8	7			1		
		Ankylosis .. .. .	..	..	..	..									
		Caries of spine .. .. .	..	..	..	..									
		Spinal Injury .. .. .	..	..	..	..	1		1				1		
		Myalgia .. .. .	..	..	..	..		16	16	16					
		Other Diseases of Organs of Locomotion .. .. .	..	..	..	..									
	Diseases of the Connective Tissue.	Cellulitis .. .. .	..	..	..	..	1	24	25	20	1		3	1	
		Abscess .. .. .	..	..	..	..	8	112	120	112				8	
		Gangrene .. .. .	..	..	..	..		1	1	1					
		Œdema .. .. .	..	..	..	..									
		Other Diseases of the Connective Tissue .. .. .	..	..	..	..									
Carried forward ..						139	3335	3474	3184	10	10	138	132		

ass.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Diseases of the Skin.	Brought forward ..						139	3335	3474	3184	10	10	138	132	
	Urticaria	..	..	..	..	..		2	2	2					
	Eczema	..	..	..	..	..		42	42	42					
	Boil	..	..	..	..	..		14	14	14					
	Carbuncle	..	..	..	..	..		4	4	4					
	Herpes	..	..	..	..	..									
	Herpes zoster	..	..	..	..	..		5	5	5					
	Psoriasis	..	..	..	..	..		1	1	1					
	Ulcer	..	..	..	..	..	45	582	627	592	4		2	29	
	Other Skin Diseases	..	..	..	..	..		1	1	1					
Injuries.	Scald	..	..	..	..	..		2	2	2					
	Local - Burns	..	..	..	..	..		9	9	9					
	(a) Wounds	..	..	..	..	..	16	434	450	426			4	20	
	(b) Sprains	..	..	..	..	..		23	23	21				2	
	(c) Fractures, simple	..	..	..	..	..	2	22	24	19	1		1	3	
	(d) Do. compound	..	..	..	..	..	1	24	25	16	1		6	2	
	(e) Disloactions compound	..	..	..	..	..		1	1					1	
	(f) Other local injuries	..	..	..	..	..	1	67	68	68					
	(g) Amputation	..	..	..	..	..		5	5	2				3	
	Shock following Abdominal Injury	..	..	..	..	..		1	1				1		
Poisons.	Belladonna	..	..	..	..	..									
	Opium Habit	..	..	..	..	..		2	2	2					
	Rengas Poison	..	..	..	..	..		3	3	3					
	Other Poisons	..	..	..	..	..		1	1	1					
	Balantidium Coli	..	..	..	..	..									
	Lambliasis	..	..	..	..	..		1	1	1					
	Schistosomum Hoematobium	..	..	..	..	..									
	Do. Japonicum	..	..	..	..	..									
	Helmintiasis	..	..	..	..	..		1	1	1					
	Taenia solium	..	..	..	..	..									
Parasites.	Do. saginata	..	..	..	..	..									
	Do. echinococcus	..	..	..	..	..									
	Other Cestoda	..	..	..	..	..									
	Ascaris Lumbricoides	..	..	..	..	..	2	153	155	152				3	
	Ankylostomiasis	..	..	..	..	..	21	477	498	460			15	23	
	Oxyuris Vermicularis	..	..	..	..	..									
	Filaria	..	..	..	..	..									
	Other Nematoda	..	..	..	..	..									
	Tinea Tonsurans	..	..	..	..	..									
	Do. Circinata	..	..	..	..	..		2	2	2					
Do. Cruris	..	..	..	..	..										
Carried forward ..						227	5214	5441	5030	16	10	167	218		



Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharge.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Parasites—(cont)	<i>Brought forward</i> ..						227	5214	5441	5030	16	10	167	218	
	Tinea Imbricata .. .. .							11	11	9				2	
	Other Vegetable Parasites .. .. .														
	Scabies .. .. .						2	74	76	76					
	Pediculosis .. .. .														
	Other Animal Parasites .. .. .							1	1	1					
	Under Observation .. .. .							34	34	31	3				
Surgical Operations.	TOTAL ..						229	5334	5563	5147	19	10	167	220	
	Major —														
	Abdominal .. .. .							4							
	Amputations .. .. .							10							
	Hernia (Radical Cure) .. .. .							1							
	Fibroma (Removal) .. .. .							2							
	Removal of Tumours .. .. .							3							
	Others .. .. .							19							
	Minor—														
	Abscess .. .. .							244							
	Removal of Cysts .. .. .							22							
	Others .. .. .							97							
	TOTAL ..							402							
	UNDER OBSERVATION .. .. .														
	NO DISCOVERABLE DISEASE .. .. .														
	TOTAL ..														
	NATIONALITIES OF PATIENTS.														
	Europeans .. .. .							25	25	25					
	Eurasians .. .. .						1	4	5	5					
	Chinese .. .. .						73	1187	1260	1097	6	6	85	66	
	Indians .. .. .						67	1417	1484	1368	5	3	44	64	
	Javanese .. .. .						3	51	54	43	3		3	5	
	Malays .. .. .						79	2570	2649	2532	4	1	30	82	
	Japanese .. .. .						1	18	19	16			2	1	
	Others .. .. .						5	60	65	60	1		2	2	
	Sakai .. .. .							2	2	1			1		
	TOTAL ..						229	5334	5563	5147	19	10	167	220	

Percentage of deaths to total treated	..	..	..	..	..	..	3 .001 %
Percentage of deaths to total treated, excluding deaths occurring within 48 hours	2 .24 %						
Total number of cases which proved fatal within 48 hours of admission	..	43					
Average stay in Hospital of Fatal Cases	..	..	..	..	..	..	35 .71 days
Average daily number of prisoners (for Prisons only)	..	..	..	..	..	..	202
Average daily number of sick	..	..	..	..	..	..	249
Largest number of sick on one day (with date)	..	..	..	..	..	..	303 on 31.5.33
Total number of beds	..	..	..	..	..	..	356

RETURN of Out-door Patients Treated for the year ending 31st December, 1933.

Malays.			Chinese.			Indians.			Europeans.			Eurasians.			Javanese.			Others.			Total.		
New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.
66432	25066	91498	10316	6085	16401	7783	3976	11659	777	431	1208	163	341	504	94	33	127	879	622	1501	86444	36554	122998

Medical Officer.

## APPENDIX IV.

MOST PREVALENT DISEASES IN GOVERNMENT HOSPITALS, 1933.

Disease.	Kota Bharu.			Kuala Krai.		
	Cases.	Deaths.	Death rate.	Cases.	Deaths.	Death rate.
MALARIA:—						
Benign Tertian ... ..	38	-	-	20	-	-
Quartan ... ..	11	-	-	8	-	-
Malignant Tertian ... ..	122	4	2.17%	196	14	4.07%
Mixed Infection ... ..	3	-	-	3	-	-
Type Undiagnosed ... ..	95	-	-	345	3	-
Malaria Cachexia ... ..	53	3	-	66	9	-
DYSENTERY & DIARRHOEA:—						
Amoebic ... ..	40	3	-	33	-	-
Bacillary ... ..	4	1	11.32%	2	-	-
Diarrhoea ... ..	11	2	-	6	-	-
Ankylostomiasis ... ..	445	13	2.92%	53	2	3.77%
VENEREAL DISEASES:—						
Syphilis ... ..	179	-	-	84	1	1.19%
Gonorrhoea and its sequelae ...	203	-	-	18	-	-
Soft Chancre ... ..	11	-	-	20	-	-
Ulcers ... ..	314	-	-	311	-	-
Pneumonia ... ..	33	4	12.12%	106	32	30.18%
Phthisis ... ..	92	22	23.9%	11	1	9.09%
Beri - Beri ... ..	2	-	-	1	-	-



APPENDIX V.  
STATE HOSPITALS.

STATISTICS SHOWING THE NUMBER OF ADMISSIONS AND DEATH RATES OF THE PRINCIPAL,  
DISEASES DURING THE LAST FIVE YEARS 1929 TO 1933.

	Total Admissions.					Deaths.					Death rate per cent.				
	1929	1930	1931	1932	1933	1929	1930	1931	1932	1933	1929	1930	1931	1932	1933
Malaria ... ..	1427	1453	1065	854	960	55	61	34	27	33	3.85	4.19	3.20	3.16	3.43
Ankylostomiasis ...	265	427	495	498	498	23	24	18	10	15	7.67	5.62	3.63	2.00	3.01
Pneumonia Lobar ...	100	120	107	166	135	34	50	27	35	36	34.00	41.66	25.14	21.08	26.06
Broncho Pneumonia	13	5	3	7	8	6	—	—	2	1	16.15	—	—	28.57	12.05
Bronchitis ... ..	255	240	204	115	172	—	1	—	1	1	—	0.41	—	0.86	0.58
Dysentery ... ..	51	104	110	118	79	4	5	11	3	4	7.84	4.80	10.00	2.54	5.06
Syphilis ... ..	176	196	229	94	160	—	1	1	—	1	—	0.51	0.43	—	0.62
Yaws ... ..	653	684	715	446	536	1	—	1	—	—	0.15	—	0.13	—	—
Ulcers ... ..	395	506	789	1010	627	—	—	3	1	2	—	—	0.38	0.09	0.31
Beri-Beri ... ..	48	47	90	25	3	6	6	10	3	—	12.50	12.76	11.10	12.00	—

APPENDIX VI.

CASES TREATED BY TRAVELLING DISPENSARY AT EACH CENTRE  
(ATTENDANCES).

Centre	Vacc:	Yaws 914	Stova:	Mal:	Anky:	Ascaris.	Eye Dis:	Skin Dis:	Other Dis:	Total
Mulong ..	99	136	104	225	53	340	35	253	599	184
Kadok ..	67	54	49	197	9	125	13	208	369	100
Kota ..	7	85	92	194	27	177	78	246	524	143
Salor ..	8	92	121	295	26	223	95	334	563	173
Wakaf Che' Merah	10	47	92	171	22	192	29	211	326	110
Pasir Mas (R. S.) ..	46	659	338	692	118	512	198	198	2799	650
Ketereh ..	210	390	430	595	78	798	153	653	1729	503
Pulai Chondong ..	29	219	263	377	43	498	91	320	976	281
Wakaf Labok ..	139	385	319	567	33	497	186	520	1235	288
Kg: Machang ..	18	422	261	523	30	357	96	368	1223	328
Kg: Pek ..	-	1	4	9	3	9	-	9	17	3
Temangan ..	-	11	4	13	8	9	-	13	59	11
Ulu Sat ..	-	42	85	229	13	106	18	193	425	111
Telosan ..	3	88	85	159	17	140	18	130	386	102
Jeram ..	6	20	83	170	3	66	12	106	348	81
Kg: Saring ..	-	-	78	81	18	92	22	114	210	61
Bukit Yong ..	22	273	305	515	35	405	131	449	1134	320
Bukit Abal ..	3	331	430	319	29	386	127	405	1124	315
Selising ..	12	390	541	423	49	476	105	529	1382	390
Melor ..	27	317	376	428	53	444	94	436	1112	328
Peringat ..	35	100	135	220	15	201	39	272	517	153
Tawan ..	86	50	262	250	35	250	35	201	652	183
Perupok ..	24	53	197	225	28	273	96	230	726	185
Bachok ..	80	197	548	1196	88	850	232	764	2621	657
Jelawat ..	21	347	493	599	53	524	116	566	1456	417
Gunong ..	4	281	334	569	26	333	146	362	1029	308
Pauh Lima ..	6	109	121	183	14	114	26	192	393	115
Pasir Tumboh ..	61	58	73	224	3	131	42	211	380	118
Rambutan										
Rendang ..	2	120	124	166	30	372	72	337	450	167
Ba'ong ..	42	28	124	101	12	200	54	338	284	119
Pengkalan Chepa	70	70	195	127	18	175	114	299	495	150
Sabok & Pantai										
Sabok ..	100	131	390	482	68	640	324	867	1474	447
Total	1237	5496	7056	10524	1057	9915	2797	11334	27017	764

NATIONALITY.

Malays	=	73,378
Chinese	=	1,721
Indians	=	807
Others	=	527
Total	=	<u>76,433</u>

## VISITED BY DRESSER FROM KUALA KRAI.

Kampong Pek ..	..	88	128	141	103	90	30	149	940	166
Temangan ..	..	109	32	234	117	100	15	52	748	140
Total ..	..	197	160	375	220	190	45	201	1688	307

NATIONALITY.

Malays	=	2794
Chinese	=	190
Indians	=	75
Others	=	27
Total	=	<u>3076</u>

APPENDIX VII.MICROSCOPICAL EXAMINATION IN STATE HOSPITAL, KOTA BHARU.

## FAECES:--

Ova Tricho Cephalus Dispar	..	..	667
Ova Ascaris Lumbricoides	..	..	840
Ova Ankylostoma	..	..	1633
Ova Strongyloids	..	..	62
Ova Oxyuris Vermicularis	..	..	9
Entamoeba Histolytica	..	..	69
Lambliia Intestinalis	..	..	23
Negative	..	..	265
Total			<u>3568</u>

## BLOOD:--

Benign Tertian	..	..	50
Quartan	..	..	18
Sub-Tertian	..	..	122
Mixed Infection	..	..	4
Negative	..	..	1793
Total			<u>1987</u>

## SPUTUM:--

Sputum T. B.	..	..	92
Negative	..	..	206
Total			<u>298</u>

## SERUM:--

Bacilli Leprae	..	..	11
Negative	..	..	14
Total			<u>25</u>

## SMEARS:--

G. C.	..	..	62
Negative	..	..	28
Total			<u>90</u>

## KHAN TEST:--

Positive	..	..	129
Negative	..	..	120
Total			<u>249</u>

MICROSCOPICAL EXAMINATION IN KUALA KRAI HOSPITAL.

## FAECES:--

Ova Ascaris Lumbricoides	..	..	102
Ova Ankylostoma	..	..	132
Ova Oxyuris Vermicularis	..	..	-
Entamoeba Histolytica	..	..	33
Ova Tricho Cephalus Dispar	..	..	17
Negative	..	..	278
Total			<u>562</u>

## BLOOD:--

Benign	..	..	38
Quartan	..	..	16
Sub-Tertian	..	..	206
Mixed Infection	..	..	4
Negative	..	..	942
Total			<u>1206</u>

## SPUTUM:--

Sputum T. B.	..	..	38
Negative	..	..	59
Total			<u>97</u>

## SERUM:--

Bacilli Leprae	..	..	2
Negative	..	..	1
Total			<u>3</u>



# APPENDIX VIII.

## ESTATE HEALTH STATISTICS.

Total Estate Population all Nationalities.															Indian Population.				
Estate Hospitals.	Total Labour Force with Dependants.	Total Admissions			Malaria		Ankylos		Diarrhoea and Dysentery		Lung Diseases		Veneral Diseases	Ulcers	Indians with Dependants	Deaths	Death rate per 1000	Births	Death under one year.
		Cases	Deaths	Death rate per 1000.	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Deaths	Cases					
Kenneth .. ..	166	75	4	—	16	1	—	—	2	—	5	2	1	4	115	4	—	8	2
Lower Sokor .. ..	201	72	2	—	19	—	—	—	11	—	5	1	2	5	133	2	—	6	—
Kerilla .. ..	357	120	10	—	25	—	—	—	7	1	13	5	4	14	242	9	—	18	3
Keln: Rubber Ests: Ltd. Chaning & Lapan Kabu & Pasir Jinggi. }	545	139	10	—	20	2	9	—	1	—	39	3	4	14	138	2	—	5	—
Kuala Nal .. ..	278	58	4	—	5	—	—	—	7	1	9	2	4	3	175	4	—	7	1
Kuala Pertang .. ..	258	108	3	—	11	—	5	—	—	—	16	3	1	2	96	3	—	4	1
Pasir Gajah .. ..	211	61	9	—	8	1	1	—	8	—	16	4	—	2	124	8	—	3	—
2016	633	42	20.83	104	4	15	—	—	36	2	103	20	16	44	1023	32	31.28	51	7

Deaths include all who died in Government Hospitals within 30 days of admissions.  
 Estates employing entirely Malay or Chinese labour are not shown, as no reliable health statistics are available.

# APPENDIX IX.

POPULATION TABLE.

	Malays.		Chinese.		Europeans.		Eurasians.		Others.		Total all Races		Births.	Deaths.
	Male.	Female.	Male.	Female.	male.	Female.	Male	Female.	male.	Female.	Male.	Female.		
Kota Bharu	109110	112090	3720	3777	32	28	10	7	4387	3243	119259	119135	8504	4274
Pasir Puteh	36966	38282	779	624	2	—	—	—	581	441	38328	39347	2856	1450
Ulu Kelantan	20165	19588	5928	1563	50	22	11	4	4316	1695	30470	22872	1471	900
Total Kelantan	166241	169960	12427	5964	84	40	21	11	9284	5379	188057	181354	12831	6624

Under Malays are included all persons of the Malayan Race classed in the 1931 Census as Malaysians.

The total number of births registered in 1932 was 12831 (6480 males and 6351 females). In every 100 births registered 50.50% were males and 49.50 females a ratio of 98.01 females to every 100 males born. The Highest birth rate according to nationalities was 35.75 per mille amongst Malays and the next, amongst Chinese 28.73. The lowest rate (amongst Europeans) was 8.0 per mille.

The total number of deaths registered was 6624 (3650 males and 2974 females).

Birth rate = 34.74 per mille compared with 26.41 in 1931.

Death rate = 17.93 per mille compared with 16.90 in 1931.

Infantile mortality = 111.77 per 1000 births compared with 135.75 in 1931.

APPENDIX IX<sup>a</sup>.

BIRTHS AND DEATHS REGISTERED SINCE INTRODUCTION OF  
NOTIFICATION IN JUNE, 1926.

	Kota Bharu Dist:		Pasir Puteh Dist:		Kuala Krai Dist:		Total	
	Births	Deaths	Births	Deaths	Births	Deaths	Births	Deaths
1926	622	496	362	259	168	123	1,152	878
1927	2,162	2,276	1,114	1,191	444	725	3,720	4,192
1928	1,595	2,204	1,469	1,417	530	722	3,594	4,343
1929	2,006	1,864	1,153	1,027	492	378	3,651	3,269
1930	3,644	2,520	1,587	916	1,045	839	6,276	4,275
1931	6,449	3,603	2,068	1,277	1,060	1,261	9,577	6,141
1932	7,898	4,272	2,856	1,450	1,471	900	12,225	6,622
1933	6,729	3,887	2,774	1,532	1,470	1,020	10,973	6,439

APPENDIX IX<sup>b</sup>.

Births and Deaths registered in 1933 according to Nationalities.

	Population	Births	Birth rate per mille	Deaths	Death rate per mille
Malays .. ..	336,201	10,259	30.48	5,938	17.69
Chinese .. ..	18,391	483	25.70	321	17.50
Indians .. ..	6,752	107	15.86	83	12.29
Europeans ..	124	2	16.12	—	—
Eurasians ..	32	2	62.45	—	—
Others .. ..	7,911	120	15.16	97	12.26
Total	369,411	10,973	29.43	6,439	17.40

APPENDIX IX<sup>c</sup>.

	Population	Births	Deaths
Kota Bharu Town	15,490	561	373

APPENDIX IX<sup>d</sup>.

Infantile Mortality

Total Births	Death under one year of age	Mortality per 1,000 births
10,973	1,423	129.60



## APPENDIX IXe.

## STATE OF KELANTAN.

Death grouped according to Age, Sex and Nationality.

Age Groups.	Sex.	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Others.	Total.
0—	M	-	-	390	23	4	2	419
	F	-	-	295	12	4	1	312
4 Weeks	M	-	-	155	4	-	3	162
	F	-	-	123	3	2	-	128
3 Months	M	-	-	91	5	2	1	99
	F	-	-	96	2	-	1	79
6 Months	M	-	-	114	2	1	1	118
	F	-	-	95	3	4	4	106
1 Year	M	-	-	376	11	3	4	394
	F	-	-	322	10	3	-	335
5 Years	M	-	-	223	6	1	6	236
	F	-	-	169	8	1	4	182
10 Years	M	-	-	73	7	-	-	80
	F	-	-	75	6	-	-	81
15 Years	M	-	-	50	3	2	1	56
	F	-	-	70	-	-	2	72
20 Years	M	-	-	89	3	2	1	95
	F	-	-	97	4	5	-	106
25 Years	M	-	-	96	10	4	2	112
	F	-	-	125	6	5	2	138
30 Years	M	-	-	144	14	6	6	170
	F	-	-	164	8	3	1	176
35 Years	M	-	-	87	16	7	2	112
	F	-	-	72	3	2	-	77
40 Years	M	-	-	148	31	8	2	189
	F	-	-	130	4	-	4	138
45 Years	M	-	-	94	26	5	1	126
	F	-	-	73	6	-	-	79
50 Years	M	-	-	199	19	1	2	221
	F	-	-	155	3	1	3	162
55 Years and over	M	-	-	769	44	7	23	843
	F	-	-	799	19	-	18	836
Total Deaths	M	-	-	3098	224	53	57	3432
	F	-	-	2840	97	30	40	3007
Births	M	1	2	5287	279	49	63	5681
	F	1	-	4972	204	58	57	5292
Total Births	M. F.	2	2	10259	483	107	120	10973

APPENDIX IX<sup>f</sup>.

## Deaths from Principal Causes.

Diseases.						Male	Female	Total
Malaria	...	...	...	...	...	58	15	73
Fever Unspecified ( probably Malaria )	...	...	...	...	...	21	7	28
Fever Unspecified	...	...	...	...	...	1703	1452	3155
Enteric Fever	...	...	...	...	...	-	2	2
Dysentery	...	...	...	...	...	39	33	72
Influenza	...	...	...	...	...	-	-	-
Tuberculosis of Respiratory System (including cases reported as "Bato' Kering")	...	...	...	...	...	61	36	97
Other forms of Tuberculosis	...	...	...	...	...	-	-	-
Leprosy	...	...	...	...	...	2	-	2
Syphilis	...	...	...	...	...	18	7	25
Ankylostomiasis	...	...	...	...	...	20	6	26
Chancer	...	...	...	...	...	-	-	-
Beri - Beri	...	...	...	...	...	-	-	-
Diseases of the Heart	...	...	...	...	...	2	-	2
Other Diseases of Circulatory System	...	...	...	...	...	-	1	1
Bronchitis (including cases reported as "Bato' Sahaja")	...	...	...	...	...	99	87	186
Pneumonia (all forms)	...	...	...	...	...	36	8	44
Other Diseases of Respiratory System	...	...	...	...	...	-	-	-
Diarrhoea and Enteritis (including "Cheroh")	...	...	...	...	...	34	19	53
Other Diseases of Digestive System) including cases reported as "Sakit Perut")	...	...	...	...	...	87	75	162
Convulsions (including "Sawan")	...	...	...	...	...	341	278	619
* Diseases of Nervous System and Sense Organs	...	...	...	...	...	1	-	1
Non - Venereal Diseases of Genito-Urinary System	...	...	...	...	...	-	-	-
Diseases of Pregnancy, Child birth and Puerperal State	...	...	...	...	...	-	112	112
* Premature Birth and Diseases of early Infantry (including 32 Still births)	...	...	...	...	...	103	71	174
Old Age or Senility	...	...	...	...	...	371	490	861
Violence (all forms)	...	...	...	...	...	51	20	71
Other Causes	...	...	...	...	...	404	292	696
Total						3434	3005	6439

\* Excluding Infantile convulsions,

Ratio per mille of population 17. 4.

APPENDIX X.ANNUAL REPORT BY THE VETERINARY INSPECTOR  
FOR THE YEAR, 1933.**1. TOTAL ANIMAL DISEASES.**

The total number of animal diseases dealt with was as follows:—

Cattle and Buffaloes	...	...	189
Horses	...	...	1
Goats	...	...	4
Sheep	...	...	2
Dogs	...	...	10
Cats	...	...	6
Fowls	...	...	6
Ducks	...	...	1
Monkeys	...	...	2

In addition to the above, villages were visited and advice given when necessary.

**2. SPECIAL DISEASES.****(a) Rabies.**

Out of 9 dogs' brains forwarded to Kuala Lumpur for examination 4 were reported to be positive for rabies.

These were from:—

- 1 dog which was destroyed on 20. 1. 33 at Kuala Nal Estate.
- 1 dog which was destroyed on 16. 8. 33 at Tumpat.
- 1 dog which was destroyed on 12. 9. 33 at Kota Bharu.
- 1 dog which was destroyed on 27. 12. 33 at Kota Bharu.

Owing to the occurrence of this disease, a Muzzling Order has been in force (under Section 7 of Enactment No. 2 of 1910) for the greater part of the year.

223 dogs were destroyed.

**Vaccination.**

Vaccine prepared by the Medical Research Institute, Kuala Lumpur was supplied in February.

The total number of dogs vaccinated was 70.

No deleterious effects were observed in any of these.

**(b) Fowl Cholera.**

There was a small outbreak of fowl cholera in the month of February in Kota Bharu.

All sick fowls were killed and all necessary precautions taken, and the outbreak subsided.

**3. IMPORT AND EXPORT OF ANIMALS.****Import.**

(a) 7 head of cattle and 9 head of buffaloes were imported from Siamese Territory.

(b) 4 dogs were imported from Trengganu and Johore.

**Export.**

(a) 217 head of cattle exported (via sea).

(b) 1866 head of cattle (of which 52 were cows) were exported (via Gua Musang).

(c) 854 head of buffaloes (of which 2 were cows) were exported (via Gua Musang).

(d) 612 goats (of which 20 were she-goats) were exported (via Gua Musang).



- (e) 146 Sheep (of which 52 were ewes) were exported (via Gua Musang).  
 (f) 1 pony and 1 mare were exported (via Gua Musang).  
 (g) 95 head of cattle were exported (from Siamese Territory via Gua Musang).  
 (h) 1243 head of buffaloes were exported (from Siamese Territory via Gua Musang).  
 (i) 4 dogs were exported (via Gua Musang).

All were examined and certificates of health were given.

#### 4. CASTRATION.

25 head of bulls were castrated by the Burdizzo method.

It is hoped to make this operation popular, as it is thought that castration of the poorer bulls will improve the breed of cattle.

#### 5. INSPECTION OF MILCH-CATTLE SHEDS, SLAUGHTER HOUSES AND MARKET.

All these places were visited frequently and advice given when necessary.

Return of animals slaughtered during the year as supplied by the District Officers concerned, is as follows:—

<u>District.</u>	<u>Cattle.</u>	<u>Buffaloes.</u>	<u>Sheep.</u>	<u>Goats.</u>	<u>Pigs.</u>
Kota Bharu	4885	1254	Nil	630	1715
Pasir Mas	2625	880	—	12	158
Pasir Puteh	888	170	—	—	19
Ulu Kelantan	776	182	136	—	1134 —
— (Jan: to Sept:)					
Total	9174	2486	136	642	3026

**D. R. METHA**

*Veterinary Inspector,*  
 KELANTAN.

# APPENDIX XI.

## VACCINATION RETURN IN THE STATE OF KELANTAN FOR THE YEAR, 1933.

Number vaccinated.										Result.	
Europeans.	Chinese.	Indians.	Malays.	Javanese.	Others.	Total.	Perfect.	Modified.	Failed.	Not seen.	Total vaccinated.
3	373	28	7278	7	34	7723	7708	15	—	—	7723

# APPENDIX XII.

## CLIMATOLOGICAL SUMMARY-KOTA BHARU, KELANTAN, 1933.

	TEMPERATURE							RAINFALL		
1933	Mean	Mean	Mean	Highest		Lowest		Rain- fall ins.	Greatest fall in 24 hours	
	Maxi- mum °F	Mini- mum °F	$\frac{1}{2}$ (Max: & Min:) °F	Maxi- mum °F	Date	Mini- mum °F	Date		Amount ins.	Date
January	83.2	73.5	78.3	85	21,22	70	7	6.12	1.02	14
February	85.2	68.5	76.9	87	sev.	65	sev.	3.75	2.45	18
March	87.2	71.2	79.2	92	26,27	67	19,20	7.78	3.91	30
April	88.3	73.6	80.9	93	30	69	1	3.82	1.31	15
May	90.4	74.7	82.5	94	sev.	73	sev.	0.46	0.20	22
June	91.0	73.4	82.2	94	1,6	71	sev.	5.25	2.36	23
July	89.2	73.4	81.3	93	19,21	70	20	6.35	1.89	26
August	89.7	73.8	81.7	93	1	72	11,25	4.18	1.24	28
September	89.3	73.1	81.2	93	17	70	21	9.45	1.90	1
October	87.8	73.0	80.4	91	2,9	70	28	10.87	2.67	2
November	82.8	72.7	77.7	91	4	71	sev.	39.57	7.24	17
December	82.8	72.1	77.5	87	29,30	69	sev.	29.14	5.88	2
Total	—	—	—	—	—	—	—	126.74	—	—
Mean or ext- reme for year.	87.3	72.7	80.0	94	—	65	—	—	7.24	—



# KELANTAN

1932

Scale 12 Miles to an Inch

Miles 12 9 6 3 0 12 Miles

## REFERENCE

- Roads Metalled
- " not Metalled
- " Proposed
- Railways Open
- Trigonometrical Station  G SWETTENHAM
- State Boundary
- District Boundary
- Alienated Land
- Forest Reserve  F.R.



PERAK

CHINA SEA

TRENGGANU

PAHANG

